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Of The Department

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Issued under the direction of the Hon. J. Allan, M.L.A., Minister of Agriculture.

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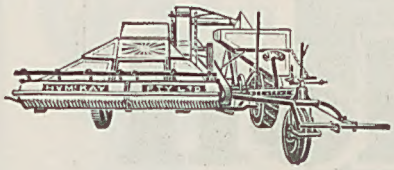

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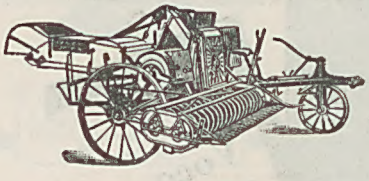

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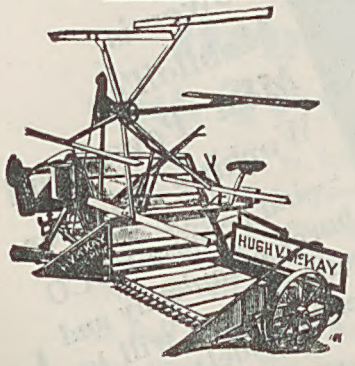

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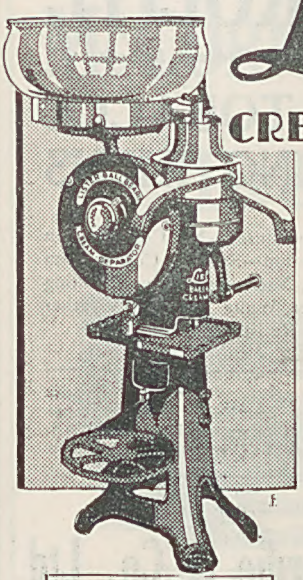

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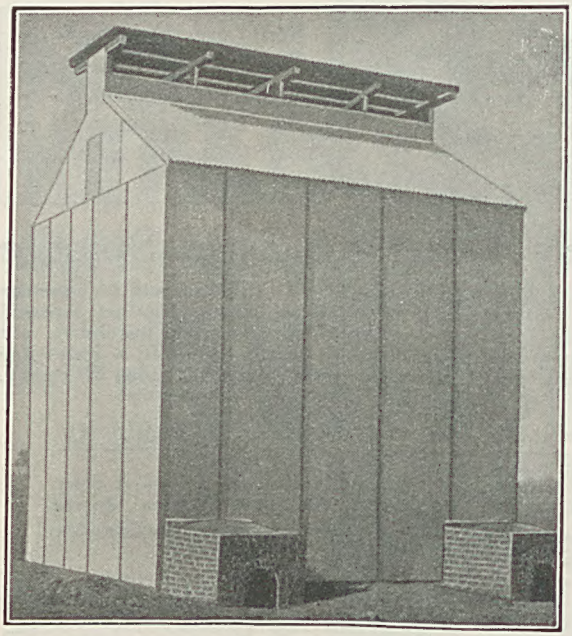

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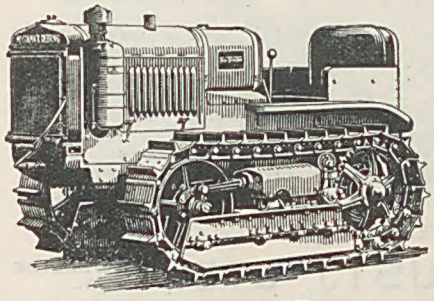

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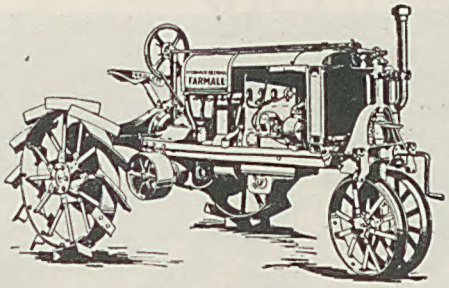

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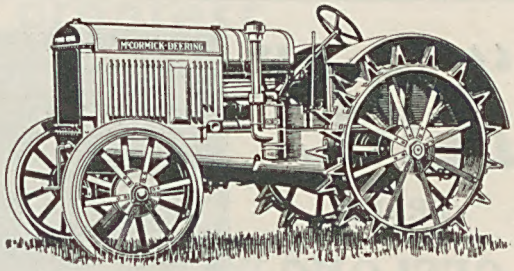

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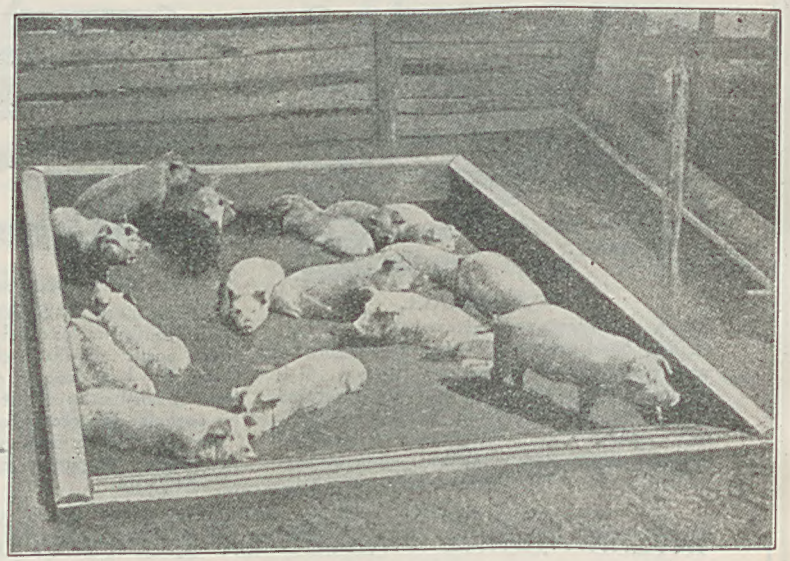

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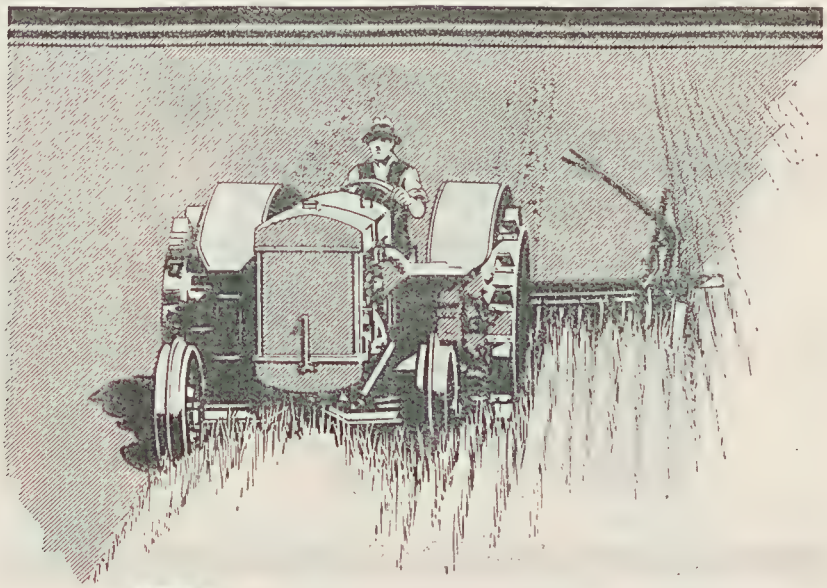

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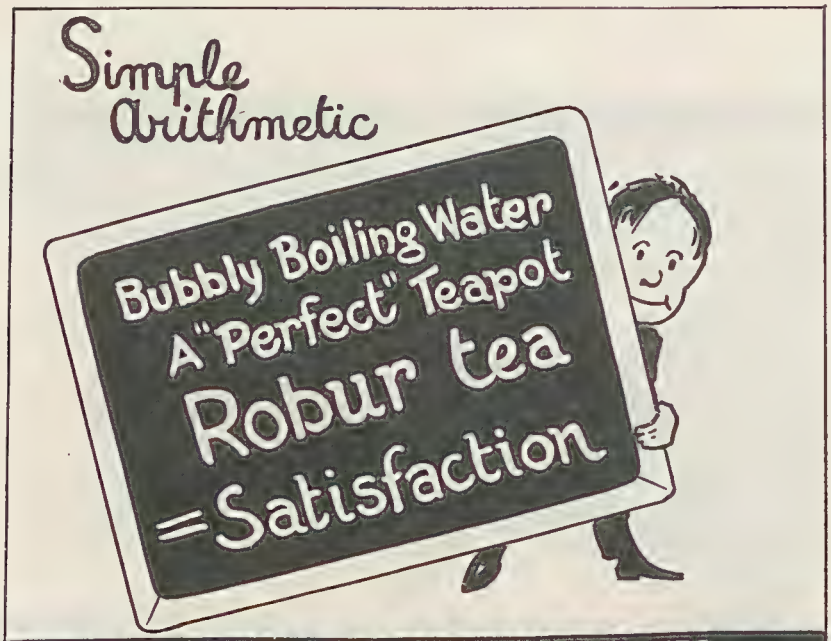

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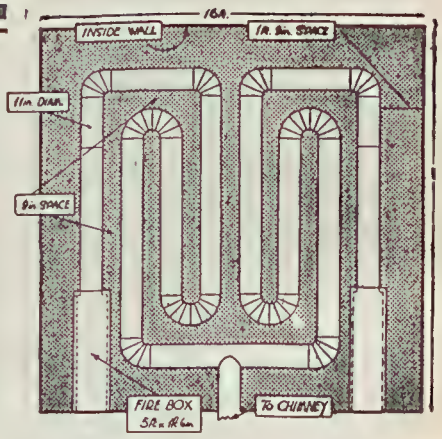

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The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

The Victorian Wheat Crop

Its Development in 1932

By H. C. Forster, M.Agr.Sc., and A. J. Vasey, B.Agr.Sc. Agricultural Research Officers.

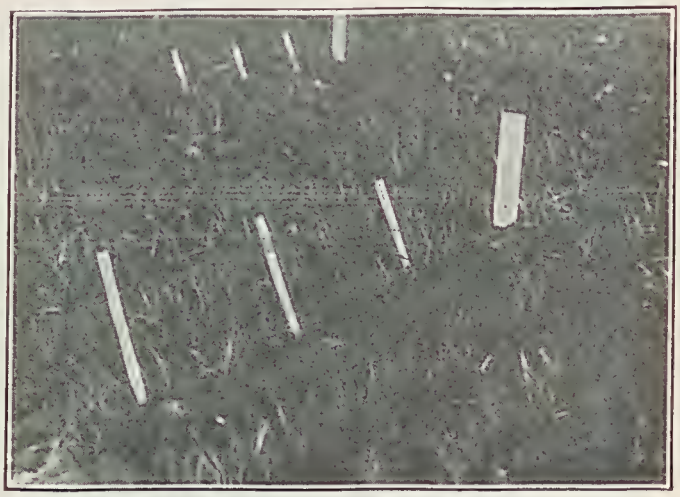
Harvesting the Wheat Crop.

IN conducting any business undertaking, it is of paramount importance that an accurate knowledge be obtained, not only of the total profit and loss accounts, but also of how each particular line of goods was received, why this one failed and that succeeded. In the same way with farming, it is just as necessary to be able to measure and record not only the total number of bags of wheat produced, but also how it was produced, how each variety behaved, the manner in which each season affected growth, and so on. In this way knowledge is stored up to enable the farmer to learn which variety will suit a given soil and climate, what amount of seed and superphosphate should give the best crops. This information is of use not only to the farmer, but also to those men who are breeding new and better types of wheats. To the wheat-breeder it is of the utmost importance to know accurately which of his varieties produces the largest head, or which has the heaviest grain. It is only by virtue of this knowledge that he can plan any improvement in existing varieties.

The obtaining of this information is quite another matter. The business man's line of goods is or should be of a uniform type, and

by the use of simple arithmetic he can achieve his desired end. With wheat, on the other hand, no two plants were ever the same, and the fact that a single acre of crop contains about 600,000 to 700,000 plants puts the use of simple arithmetic out of the question.

It is here that the Department of Agriculture steps in to help and examine typical crops in the various districts—different varieties, rates of seeding and manuring being tested. Plots are specially sown under the prescribed conditions, and then samples of 1 foot length are scattered through the plots and marked, and the plants falling within these samples are examined throughout their life history. Some idea of the scope of the work may be gained from the fact that, during the past year, 250 plots were examined in four districts, viz., Werrimull in the Mallee, Longerenong in the Wimmera, Rutherglen in north-east, and Werribee in central district. Some 15,000 foot samples were marked out, and during the year about 120,000 plants were examined individually and counted.



A single census sample showing three feet of drill row marked out in samples of 1 foot length.

To obtain a comprehensive grip of the plant development, it is necessary to examine the crop at three stages of development—(1) After germination for the number of plants; (2) in September to determine the number of stools or stems produced per plant, their height and weight; and (3) at harvest to obtain the number of ears per plant, the size of ear and the weight of grain.

In the final summary of this crop "census" (as it is called), it is possible to express the ultimate yield (Y) of any plot as the product of four factors (*a*) the number of plants per plot (p); by (*b*) the number of ears per plant, (*e*) these two together comprising what is known as the crop density, by (*c*) the number of grains per ear (n), and (*d*) the average weight of grain (*g*) i.e., Y= p x e x n x g.

Successive stages in the growth of the wheat plant from seedling to shot blade. Note development of primary then secondary stools. In the plant on the right secondary stools have died without producing ears.

Seasonal conditions in 1932 were most favorable. An early break in February and March was continued into April, and allowed of an early start with the ploughing of the stubbles and with the final working of the fallows. Seeding conditions, therefore, were of the best for the greater part of the wheat belt. Unfortunately, some people failed to start early enough and the resultant weed growth was astounding.

Winter rainfall was excellent, and moisture was never wanting. The late spring from October onwards tended to be dry, but

its bad effects were mitigated by the extensive reserves of moisture in the subsoil and by the cool weather conditions. The crop thus matured under excellent conditions, and it is doubtful if the yields would have been greatly augmented by any heavier rains during this time.

The early break and good seeding conditions enabled an excellent tilth of soil to be obtained in most areas, and germination conditions in the warm moist soil were excellent. Percentages of grains germinating to grains sown ran 80 to 90 per cent., and often higher. The wet, badly-drained areas of the Western District and north-east were the only ones to show patchy germination. Subsequent plant survival was excellent, and disease was not a major problem where suitable precautions had been adopted. Occasional patches of "take-all" were generally restricted to low-lying areas, and except for portions on the Sea Lake and Manangatang lines, the scattered infection of the "white heads" of foot rot were not as bad as usual.

The rate of seeding was thus the main determining factor in the plant population of this year's crop. Mallee farmers with the drill set on 50 lb. per acre seeded 7 to 8 grains per foot of drill row, and finished the season with 5 to 6. Wimmera farmers with a rate of 70 lb. per acre placed 9 to 10 grains per foot on the seed-bed, and finished with 8 to 8.5. Other farmers seeding at the heavier rates of 85 to 90 lb. per acre sowed 12, and finished with about 10 grains per foot of drill row.

So much for the population factor of the past year. With regard to the growth of the plants, a much more interesting state of affairs has occurred. We will review the general development of the crops in the various districts first, and then proceed to discuss special cases of interest later.

Those crops which were sown in April and early May made wonderful growth in the warm moist soils, and proceeded to stool vigorously. The stooling counts for the various districts showed the tremendous body of growth which had taken place. The variety Ranee sown at 50 lb. per acre in the Mallee gave an average figure of 5.3 stools per plant, where normally it would not average more than 3.5. This crop while still in the shot blade (i.e., just before heading) was standing about 18 inches high, and if cut at that stage would have weighed about 5½ tons per acre in the green state. This spring growth is, of course, quite phenomenal for the Mallee, and would never have "finished" the season if favorable weather had not been experienced. The crops in the Wimmera were correspondingly thicker. The variety Federation sown at 75 lb. per acre at Longerenong averaged about 5.9 stools per plant. This crop at the same stage of growth as that of the Mallee crop stood about 24 inches high, and would have weighed over 9 tons per acre. The figures for the variety Free Gallipoli at Werribee, sown at 85 lb. per acre, were about 24 inches high, 3.1 stools per plant, and the green crop would have cut 7 tons per acre. It is obvious then that the season had resulted in exceptional growth.

The Western District and north-east had a rather thin time (literally as well as figuratively), as the figures from a crop of Federation at Rutherglen sown at 75 lb. per acre gave a weight of only 4 tons per acre of green crop.

Except for these areas then there were immense possibilities in the crops. As the heads began to appear, good rains continued to favour the maximum development of the crop. Figures for the heading of those crops quoted are as follows:—

The Ranee from the Mallee—2.8 ears per plant, crop density 18.8 ears per plant, resulting in a final yield of about 30 bushels per acre.

The Federation crop from the Wimmera—2.3 ears per plant, crop density 19.8 ears per foot. Resultant yield about 42 bushels per acre.

The Gallipoli crop at Werribee—1.6 ears per plant, crop density 16.0 ears per foot, and yield about 27 bushels per acre.

Federation at Rutherglen—1.4 ears per plant, crop density 12.0 ears per foot, and yield only 20 bushels per acre.

Passing now to a study of several interesting problems that have arisen from this year's observations, perhaps the most outstanding result has been obtained from time of seeding trials. It is of particular interest to Mallee farmers. A trial at Werrimull with Ranee sown at three periods, early (in April), mid-season (in May), and late (in June) has shown the importance of early seeding. Germination was even, so that population was the same on all plots.

The early sown plants stooled well, and formed about 6.3 stools per plant, the mid-season 4.5, and the late only 4.1, so that right

from the beginning the early crops had the advantage. Heading figures showed that the lead had been held, and the respective figures were 2.85 early, 2.45 for mid-season, and 2.15 for late sown. Ear size further accentuated these differences, and the crops finally yielded as follow:—Early sown, 33 bushels per acre; mid-season, 27; and late, 19 bushels per acre.

Once again, therefore, early seeding has been shown to be of the utmost importance for the Mallee districts. Similar increases have been shown in other parts of the State, although the optimum times of seeding vary from those quoted. It stands to reason that, other things being equal, the longer a plant has to grow and form the basal framework of stools before the heading season in September, the larger will be the amount of plant food formed and the greater will be the final yield.

It is the general practice in Victoria to sow the wheat crop with a dressing of superphosphate varying in the different districts from 40 to 140 lb. per acre. The main effect of this treatment is in stimulating and strengthening the young plant, and this finds expression in an increase in stooling, and finally results in a denser crop. In a season such as that under review, when climatic conditions favoured an excellent early establishment of plants, we might expect that the usual large responses from superphosphate would not be shown, and this has been the case in the crops studied. Nevertheless the use of superphosphate remains a sound investment in the form of an insurance that the crops shall be thick enough in each year to give the best yields the later seasonal conditions allow.

The important question of "What is really the best variety, and why?" which was the original aim behind these investigations has led us, by reason of the more exact knowledge gained, to a much finer appreciation of the varieties bred here in Victoria. Simple plot trials showed that the original importations from England were easily beaten by crossbreds such as Farrer's Federation. Later work has shown that Federation in its turn has been outyielded by later crossbreds selected by our plant-breeders, but it has not been until this investigation began that we have known "why" or "how" that increase was produced. A study of the growth characteristics of various varieties has shown that there are fundamental differences in the amount of vegetative growth they make; and, secondly, (this is the important part) there is a vast difference in their ability to produce heads from a given amount of growth. All farmers know that wheat plants do not mature heads on all stalks. Those stalks which are useless from a head point of view have used up a great deal of plant food and, more particularly, water in their production. In wet climates such as in England this waste may not be important, but under Australian wheat belt conditions it is of the most vital importance that all the moisture possible be conserved, and therefore it is not surprising to find that each successive improvement on the old English importations has been largely an improvement in this ability to reduce waste growth to a minimum. To quote some figures—

(1) The old types, such as Purple Straw, produced about 20 to 30 ears for every 100 stools.

(2) Federation produced this year about 35 to 40 ears per 100 stools. Free Gallipoli produce slightly more, about 40 to 45.

(3) Ranee and Rajah, Waratah about 50 to 55.

(4) Ghurka about 60 to 70.

This figure of the number of ears produced per 100 stools has been termed the "survival value," and is far and away the best figure we have yet for real "drought resistance." Other methods are being developed, and it is hoped that a ratio of ears to the weight of green produce may be an even better figure. The outstanding variety at present is Ghurka, and it is significant that this variety is doing well wherever it is being grown in Victoria, and has topped the yields in departmental plots in many places.

The census information shows that our best drought resistant wheats not only have a high figure for "survival value," but also it has supplied the reason. It is a comparatively simple matter therefore for plant-breeders to obtain a measure of this most important varietal characteristic.

Size of Ear.

So much for a brief consideration of stooling and ear production in the Victorian wheat crop. We pass now to a consideration of the other important factor in yield, namely, size of ear.

It should be pointed out here that all the most improved practices of cultivation and manuring have their main effect in raising

yield in increasing the density of the crops, they affect ear size hardly at all. For improvement in this very important yield factor we have to look to the newer varieties of wheat, and the ability to fill a satisfactory ear in late spring is largely bound up with the conservative spring growth and high survival of stools to ears, already mentioned. The variety Free Gallipoli has this ability in a remarkable degree as will be indicated later.

Typical Free Gallipoli Ears.

The number of grains per ear and the size of the grain are further dependent largely on the amount of the late spring rainfall, the October rainfall determining the number and that of November the size of grain. This year the rainfall in these months was definitely low, but due largely to the remarkably cool weather conditions prevailing the crops were able to mature normally on subsoil reserves of moisture.

It may not be out of place here to consider the question of crop estimates for a moment. Most people are guided in their decisions almost solely by the thickness of the crops or the number of ears per acre. They tend to neglect the important factor of the size of the ears. Possibly they guess them to be of average size, which by the way is 18 to 20 grains per ear. In 1932, however, yield per ear was considerably above average, hence the substantial increase in yield on the early estimates.

One very typical instance comes to mind, a crop of Free Gallipoli in the Wimmera. Considering its density or number of ears, and assuming average ear size, 10 bags per acre would have been a reasonable estimate. Actually the ears each carried 26 grains, and the crop yielded no less than 44 bushels per acre. In a crop of such thickness every extra 2 grains per ear meant a little over another bag to the acre.

Returning to our census observations, we will conclude with a brief review of the crops studied in the various districts. The census measurements cited will be those for the four factors of yield:—(*p*) number of plants, (*e*) number of ears per plant, (*n*) number of grains per ear, and (*g*) size of grain. In the following figures the measurement for (*p*) will be given as number of plants per foot of drill row, and that for grain as the number per pound weight, the average figure for this latter measurement being in the region of 12,000 grains per lb.

We shall deal first with a crop of Ranee 4H at Werrimull. Here the observations were divided into two sections, and the opportunity will be taken to distinguish between the different types of crop produced by the same variety on flats and sandhills in the same paddock.

RANEE 4H AT WERRIMULL.

Soil.	Plants per Foot.	Ears per Plant.	Ears per Foot.	Grains per Ear.	Weight of Grain.	Yield per Acre.
					Grains per lb.	Bush.
Flat ..	7	2·9	20	16	12,800	32
Sandhill	7	2·5	17	19	11,500	34

These figures give a fairly typical picture of a 1932 Mallee crop. The effect of the good season is noticed chiefly in the high reading for ears per plant. The crops on the flats are always thicker, and go off much more quickly in late spring. On the sand ripening is much slower, and maturing normally the crop in this instance more than made up for its thinness by an increase of three in the number of grains per ear and by larger grain,

and outyielded that on the flat by 2 bushels per acre.

Two Crops at Longerenong.

Variety.	Plants per Foot.	Ears per Plant.	Ears per Foot.	Grains per Ear.	Weight of Grain.	Yield per Acre.
					Grains per lb.	Bush.
Federation	9	2·2	20	21	11,500	45
Free Gallipoli	8	1·8	14	26	10,600	44

Because two varieties produce about the same yield per acre, it does not follow that they are similar in other respects. It will be seen that these two crops of Federation and Free Gallipoli at Longerenong were very differently constituted though both are typical of the varieties named. Federation has a large number of moderate-sized ears, while the larger ears of the Free Gallipoli practically make up for its deficiency in numbers. This type of crop—fewer but larger ears—is much more drought resistant than one of Federation, and corresponds more to the Mallee sandhill type. It represents what has been achieved to date by the plant-breeding activities of the Department of Agriculture, and indicates the lines on which we are at present working.

A Werribee Crop.

Variety.	Plants per Foot.	Ears per Plant.	Ears per Foot.	Grains per Ear.	Weight of Grain.	Yield per Acre.
					Grains per lb.	Bush.
Free Gallipoli	9	2	18	20	12,200	37

The rainfall of the Werribee portion of the Central District cannot be termed copious, and drought resistance is just as important there as in the wheat belt proper. The yield from the crop of Free Gallipoli quoted herewith is above average, due to a thicker crop resulting from a seasonal improvement in number of ears per plant. The grain size is, however, lower than usual, and under the circumstances somewhat disappointing.

In the North-East.

Variety.	Plants per Foot.	Ears per Plant.	Ears per Foot.	Grains per Ear.	Weight of Grain.	Yield per Acre.
					Grains per lb.	Bush.
Federation	8	1·5	12	18	13,000	20

A favorable season over the rest of the State usually means an extremely wet winter in the north-east, which is unfavorable to crop development. This crop of Federation studied at Rutherglen never recovered from its early setback from this cause, and in addition to being a thin crop had small ears. Under similar conditions the greater ear size of Free Gallipoli has enabled it to outyield the older variety by three or more bushels per acre.

The value of this investigation lies in the fact that it has indicated the parts to be played in yield improvement by manuring, cultivation, and varieties. The work with varieties has further explained the means by which success has already been achieved in the production of new drought resistant types, and defined the most promising lines for this work in the future.

Both yield testing and census observations lead us to recommend with the greatest confidence the varieties Free Gallipoli, Ranee 4H, and Ghurka to the farmers of the Victorian wheat belt. Though bred primarily for drought resistance these varieties have proved themselves capable of high yields under good conditions.

Potato Growing in Victoria

By J. T. Ramsay, Potato Expert.

Typical Potato-growing Country, Gippsland, Victoria.

VICTORIA is the most important potato-producing State in the Commonwealth. Out of a total average area of 130,000 acres planted annually to potatoes approximately 65,000 acres are grown in Victoria.

The cultivation of the potato crop in Victoria is confined mainly to the Gippsland country, the central highlands, and the south-western districts, all in the south of the State. These districts are favoured with good average rainfall, varying from 30 to 50 inches annually, and distributed fairly well throughout the year. It is estimated that to enable it to produce reasonably fair yields the potato crop requires at least 10 to 12 inches of rain during the growing period.

The irrigation districts in the north and certain northern parts produce fair crops of potatoes, but only a very small percentage of the State's production is grown in these places. None of the production of the northern irrigation areas finds its way on to the Melbourne market, being absorbed by the local demand.

The accompanying table, which gives a fairly close approximation of the distribution of the potato crop in Victoria for 1929-30, may be taken as typical, as there is but little variation in total area grown from year to year.

DISTRIBUTION OF POTATO CROP IN VICTORIA.
TOTAL AREA, 65,000 ACRES.

Central	34 per cent.
North Central ..	18 „
Western	13 „
North-Eastern ..	2 „
Gippsland	33 „

The potato may be grown on practically any soil short of heavy clay, the ideal soils being those varying between sandy and loam. The need of the crop for a good and fairly even condition of moisture during the growing period precludes the growth of good paying

yields of it (in the average season) in the drier portions of the State, where the rainfall is under 25 inches per annum and no irrigation is practised, but the average rainfall of nearly the whole of the southern portion is ample, and suitably distributed throughout the year, for its profitable production.

At present the average yield per acre for the State is approximately 3 tons, and this low tonnage, as compared with that of other countries, is undoubtedly due, in very large part, to the haphazard methods followed by many growers in dealing with the crop.

The potato is one of the State's most important crops, and it is necessary that every effort be put forth to bring its cultivation and production up to the highest standard. If growers devoted more special attention to cropping potatoes, they would find an accompanying increase in the yield of the other crops grown in rotation. This is so, because the potato crop, more than most others, demands a high standard of farming and more constant tillage, if the best results are to be obtained, and crops grown in rotation with it benefit from this intense cultivation.

In the cultivation of potatoes, there are three factors within the control of the farmer and which govern the yield. These are—

1. Condition of the Seed.
2. Physical Condition of the Soil.
3. Plant Food in the Soil.

These factors are all-important. The abundance of plant food, and the perfect condition of the seed, will not produce a full crop if the physical condition of the soil be bad; and, similarly, a low standard of fertility of the soil, or of the vigour of the seed, will give a disappointing return, even though the other two factors be correctly adjusted.

Condition of Seed.

The varieties of potatoes on the world's markets are legion, and year by year the number of these is being added to by propagators, who diligently and continually seek after new sorts, which, it is hoped, will eclipse the records of current or past varieties.

Many growers are ever anxious to test new sorts, and buy up any variety produced which gives promise of profit by virtue of its having, in an outstanding degree, one or more of the features which make a potato desirable from the cultivator's point of view, viz., earliness in maturing, good cooking quality, strong disease-resistant power, and productiveness. But no sooner do the majority of growers procure a new variety worthy of attention than they, by their treatment of it, proceed to "run it out" with all possible speed.

An illustration of this is afforded by the Brown's River variety, which, about 40 years ago, represented probably 90 per cent. of this State's potato crop. By persistent maltreatment, that is, lack of selection and the use of seed from inferior plants, it became

Potatoes at Werribee, Victoria.

progressively less productive until it practically went out of cultivation. Another and more recent illustration is that of the New Zealand Pink Eye variety. This potato was grown in the Western District for many years as a "first early." It had certain characteristics which made it peculiarly suitable for that part of the State. On account of its proximity to the seaboard the Warrnambool-Koroit-Port Fairy district is so free from frosts that planting may be safely done as early as July or August. Notwithstanding the earliness of the district, it is so exposed to winds that any early variety grown there must have foliage of a hardy character in order to resist wind damage. The New Zealand Pink Eye had this characteristic in a marked degree, and also would carry in an immature condition better than other early varieties. Because of these features it was favoured by the Western District growers to the exclusion of other early varieties such as Carmen I. Of late years, however, the Pink Eye has proved so unproductive that, like the Brown's River, it has practically dropped out of cultivation. The principal cause of this undoubtedly is the failure on the part of growers to practise some proper form of seed selection.

Potato Experimental Plots, Beech Forest.

Degeneration is Preventable.

There is no reason why any good variety of potato should not remain in cultivation as long as growers remain to cultivate it. Once a grower secures a variety that suits his local conditions, he should so treat it that rather than "run out," it will tend to improve as time goes on.

The length of time any particular kind of potato remains in profitable cultivation is governed by two things, viz., the treatment it receives, and its vigour at the time of its introduction.

Some varieties are more vigorous than others when produced from the seed-berry of the potato plant, and consequently can stand more adverse treatment before falling into a condition of low productiveness, than can those of less vigour. But no matter how vigorous any variety may be, it cannot withstand the degenerative influence of bad or unselected seed.

Breeders of good stock aim at reproducing only from the best types available to them, and if continual selection of the best were not made, degeneration would quickly follow. Growers of plants are under the same law. Like—for the greater part—produces like. Yet one often finds being used for seed, potatoes which could be more profitably used as stock food.

When poor conditioned seed is employed to grow any crop, that crop is so handicapped that its finish will be disappointing. A very large proportion of the crops grown in the State start with seed of impaired vitality. To illustrate that this is not an exaggerated statement, it is necessary only to review briefly the common practice amongst growers.

Ordinarily potatoes are allowed to ripen in the ground before being dug, and the seed for the following season is selected either from the crop after it has been bulked, or from the rejects from the marketable tubers. After this "selection" has been made, the seed is generally stored in any place where it can be conveniently disposed of, in heaps, bagged or pitted, and is often forgotten until required for sowing. The result is that by that time the potatoes intended for seed have a mass of long, delicate, white shoots, many of which are broken off in the handling incidental to planting, and, in many cases, the remaining sprouts are carefully and deliberately removed by the growers. The object in breaking off the balance is, of course, to prevent the irregular appearance of the crop above the ground, and

with such an object in view, the practice of desprouting serves its purpose, *but the seed suffers.*

Where such methods are followed, it is evident that the best seed cannot be secured, since after the produce of a field of potatoes has been bulked, it is an absolute impossibility to discriminate between the produce of strong growing, prolific plants, and that of weak plants.

For economical reasons, small-sized tubers, i.e., tubers under the size marketed for table use, are often taken for seed. There is no objection to the use of small-sized seed provided proper selection of it is made. The necessity for selection becomes apparent, however, when it is pointed out that there are two classes of small potatoes. First, there are those which are small because of some weakness of the parent plants; and, second, those which are the later-formed tubers of strong plants which have not had time to develop to full size. As it is impossible to separate these two classes once they are mixed, it follows that, if selection is made of seed after bulking of the crop, the seed parcel will contain a yearly increasing percentage of the produce of plants of low-yielding power, with the result that the particular variety being so treated will give progressively diminishing returns, until it becomes entirely unprofitable, or "run out." Even where large-sized seed is used, and selection made from bulk, there is the same risk of inclusion among the seed of the produce of weak plants, as very often a weak plant will give only one or two tubers of fair size and perfect shape, but of poor constitution.

In actual tests carried out at Millbrook during 1932 and 1933 the average increase obtained from selected seed was 44 per cent., all other factors except the seed being equal. In the seven years period over which these two classes of seed have been tested, the following average yields have been obtained, the average increase resulting from the case of selected seed being 1 ton 19 cwt. per acre, or a 35 per cent. increase on the yield from unselected seed.

YIELD.

	Tons.	Cwt.
Selected seed ..	7	8
Unselected ..	5	9
Average increase	1	19

Percentage Increase, 35 per cent.

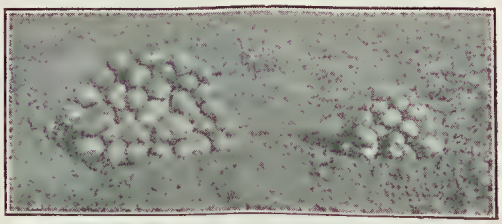
NOTE. — The weights recorded are for market-size tubers only.

Seed Selection.

There is but one method by which potatoes may be selected for seed, so that the standard of trueness to type and yielding capacity may be maintained unimpaired, and that is, by selecting from the field crop *while the crop is green and growing,* the seed intended for the following season's planting.

Seed selected in this way can be chosen from the most desirable plants, i.e., those plants which are healthiest, most vigorous, and producing the greatest number of marketable-sized tubers. Seed selected from such stock must produce plants of more vigour than seed taken promiscuously from a heap where fit and unfit are mixed.

The average grower of any quantity of potatoes may be inclined to think that this entails more trouble and cost than the crop is worth, but it is not so. For those who



Produce from 1-chain rows. Left, selected seed; right, unselected seed.

plant large acreages each year, and who, therefore, require many tons of seed, the work of selecting can be carried out in the following manner:—Suppose a grower plants 50 acres of potatoes yearly; that in normal seasons he gets 5 tons per acre, and that he wishes to select his seed with a view to improving his stock. At the rate of sowing of 12 cwt. per acre, it takes 30 tons to plant 50 acres. Now 6 acres of crop, at 5 tons to the acre, gives 30 tons, therefore, if sufficient seed for 6 acres, viz., 3 tons 12 cwt., were rigidly selected each year, and a 6-acre area planted with them, the grower would have yearly a stud plot producing tubers of a high standard sufficient to plant the whole of his 50 acres. For the purpose of illustration, the rate of planting has been taken as 12 cwt. per acre, but this may vary according to the size and the spacing of the sets. The probability is that the rate of production of the stud plot, too, will vary, and be nearer to 10 tons, on the average, than the 5 tons mentioned in the calculation.

Immature Seed Increases Yield.

In harvesting any potatoes intended for seed, care should be taken to dig the tubers out of the ground before they are matured. As a rule, the seeds of plants require to be thoroughly ripened before they are best able to reproduce their kind. The potato "seed," however, is not the true seed of the potato plant. This is contained in the berry, which is produced above ground. The potato "seed" used for planting is merely a section of the previous season's plant, and is, therefore, really a cutting, and not a *seed*. The improvement in the yield from immature seed, as compared with ripe seed, has been so long and clearly demonstrated, that the practice of securing seed, dug before the ripening of the plants, has been thoroughly established for some time in countries where a specialty is made of potato culture.

On the average, the increase in the crop resulting from the use of immature seed is from one and a half to two tons per acre, and as the average yield for the State under methods at present employed is only about 3 tons per acre, it can be seen that the profit awaiting farmers who will adopt this more up-to-date practice must be admitted to be well worth the little extra trouble involved.

The best time at which to harvest potatoes intended for seed purposes is when an indication of ripening is shown by the first yellowing of the leaves. Harvested at this stage, a sufficient degree of maturity is obtained to give the desired increase in yield, while but little weight of crop is sacrificed. Care should be taken to differentiate between the yellowing of the leaves from natural ripening and the yellowing caused by disease or insect trouble.

No explanation can be given of the higher efficiency of immature seed, but the fact is sufficiently demonstrated for acceptance without any scientific support. As a matter of fact, the higher value of immature seed as compared to ripe seed was noticed and appreciated by Scottish growers more than half a century ago.

Experiments at Millbrook and in other portions of the State afford ample evidence as to the value of immature seed in increasing crop yields. In these tests market-size tubers only are taken into consideration, yet the results show over an eight years' period an average increase of 27 per cent. in favour of immature seed. The actual figures are as follow:—

AVERAGE YIELD, EIGHT YEARS.

	Tons.	Cwt.
Immature seed	8	5
Ripe seed	6	9
Increase	1	16

Percentage Increase, 27 per cent.

[*Further articles on potato-growing will be published in subsequent issues of the Journal.*]

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Poultry Quarantine Restrictions

IN order to facilitate the movement of poultry from areas outside the districts quarantined because of the outbreak of pseudo-poultry plague, the Department of Agriculture has removed the quarantine restrictions on railways and railway premises within the metropolitan area.

Under those restrictions persons forwarding poultry from country centres to Melbourne were required to obtain a permit from an inspector of stock before the consignment could be accepted by the railways. Under the new arrangement the birds can be forwarded on the railways without permit.

To maintain control of the disease the Department's inspectors will issue the necessary permits to the carriers and other persons taking delivery of birds at Spencer-street. This arrangement will greatly facilitate the despatch of poultry from country centres to metropolitan sale rooms.

In the case of poultry forwarded by road, the restriction requiring the birds to be accompanied by a permit issued at the place of origin will still be enforced.

Irrigated Crops

Sowing Lucerne and Permanent Pastures

By L. C. Bartels, B.Agr.Sc., Senior Irrigation Officer.

LUCERNE and mixed pastures are the main permanent crops grown in the dairying districts under irrigation in Victoria. Lucerne has been the basic crop in the development of our closer settlement irrigation districts, but the area under mixed grasses and clovers has extended so rapidly that these are now of major importance.

To remind readers of the value of lucerne one has only to refer to the high yields of 5 or 6 tons per acre of excellent hay which are obtained annually in the favoured parts from a succession of cuts of this crop or to the fact that, in many parts of the Goulburn Valley and elsewhere, sheep are fattened at the rate of fifteen and more to the acre during the summer season. This high production will be maintained for from five to ten years under good treatment.

To extol pastures one need not deprecate lucerne, although there is no doubt that mixed grasses and clovers are supplanting lucerne in the older districts. They are winning favour because of their wide adaptability—wonderful pastures are growing at Cohuna and Swan Hill as well as at Werribee; they luxuriate on the clay loams of the Goulburn Valley as well as on the deep loams of Maffra and Sale; they fit into places unsuitable for lucerne, and they are permanent and productive and provide continuity of feed.

Lucerne and pastures may both be sown in April and May. It is important that these crops should get a good start. Good seed should be sown on a firm clean seed-bed, and because their production will be governed by the regular application of water, the land should have been previously graded to permit of the most effective irrigation. The requirements of both crops are similar, and extended preparation should be given to the land. Bare fallow permits the production of a good seed-bed, and facilitates grading operations which, if they are to be thorough, must be repeated at intervals.

The border system of irrigation is recommended for general adoption. This system involves the division of the land into long narrow bays by means of banks which extend down the slope. These banks are often 10 chains long and from 22 feet to 66 feet apart. The ground between the banks is reduced to a plane surface levelled from side to side and with a slope down the bay made as uniform as possible. Grading involves the razing of bumps and filling of hollows, and although as far as the eye can judge this may be satisfactorily done after one operation, the loose filling in depressions will settle and hollows

Grading Land for Irrigation.

will reappear. A repetition of the levelling, therefore, becomes necessary. Land which has been recently cleared of timber may be roughly graded and sown with a cereal crop before lucerne and pastures are sown. The fact that grading operations effect a permanent improvement should encourage farmers to do the work as thoroughly as practicable at the start.

Watering Lucerne at Werribee.

Where conditions are suitable, lucerne is a great pioneering crop, and the excellence of the pastures in many districts may be attributed to the subsoiling action of the lucerne roots and the enrichment of the surface soil by leaves. For this reason, it may be better to sow lucerne on new ground with a view to the establishment of pasture after a few years.

Lucerne and pastures should be sown in autumn or spring when the ground is moist and warm. For economy of seed, drilling is advised. Sowing with superphosphate is recommended, the seed and manure being mixed immediately before sowing and sown through the manure run of the drill. As it is necessary to sow shallowly, the tubes of the drill should hang free. Covering of the seed is effected by a chain looped and trailing on the surface behind the drill. At Werribee it is the practice to sow half the seed in one direction and the other half at right angles. The rate of seeding recommended for lucerne is 8 to 10 lb. per acre.

For pastures the following mixture recommended by the Department of Agriculture has given satisfactory results where sown under proper conditions:—

	Per Acre.
Perennial rye-grass (Western District or New Zealand old pasture seed)	10 lb.
Italian rye-grass	3 lb.
Cocksfoot	5 lb.
Perennial red clover	2 lb.
White clover	1 lb.
Alsike clover	1 lb.
Subterranean clover	1 lb.
Strawberry clover	¼ lb.
Lucerne	1 lb.

The quantities of seed recommended are low, compared with what are usually advised. They refer to good germinable seed, and are given as adequate for the condition of seedbed outlined and for sowing at the right times of the year. Out of season sowing will demand a higher rate of seeding.

Samples of seed of these pasture elements drawn from a quantity supplied by a Melbourne firm last year were examined, and the following estimates of the number of seed per lb. were made:—

	Seeds per lb.
Western District rye-grass	276,000
Italian rye-grass	248,500
Wimmera rye-grass	248,000
Cocksfoot	448,500
Red clover	243,000
White clover	720,000
Alsike clover	678,000
Subterranean clover	66,600
Strawberry clover	265,000
Lucerne	220,000

Allowance must be made for defective germination, but the seeding rates given will establish a dense population of seedlings. A struggle for existence ensues. Some of the plants are short lived, and not much red clover, alsike, or lucerne will be found after a few years, but rye-grass, cocksfoot, white clover, strawberry clover, and subterranean clover will be the dominant elements, and the relations between these are determined by conditions or the treatment accorded to the pasture.

Reference was made above to Western District or New Zealand old pasture rye-grass, and this has a particular significance. There is a wide range of types included under the general

name of "perennial rye-grass." Plants whose flowers are cross fertilized have very variable progeny, and, therefore, a sward of pasture contains a community of variable plants in the one species. Sustained natural selection or the influence of particular management practices leads to the ascendancy of particular strains, the fittest for the particular conditions, and so there are produced regional strains. It is obvious that acclimatized strains should be sought—productive strains of rye-grass which have evolved under local conditions—which will persist through dry weather and withstand the effects of heavy grazing. If not procurable from Victorian sources they should be obtained from the nearest locality where grasses of known superior capacity exist.

In the countries which have specialized in seed production strains of plants which produce seed freely are cultivated; in fact, continued seed harvesting causes such types to develop. These are not necessarily the types of greatest value to the farmer—often the long-lived leafy types are shy seeders, and so the seed is scarcer and more valuable. It is to be regretted that inferior strains of grass and clover which are more prolific in the production of seed have been widely used on account of the cheapness of the seed to the exclusion of the superior strains which have made a reputation for the particular species. The best seed will be the cheapest in the end.

Perennial rye-grass is made the basis of the mixture. Evidence of its permanency under suitable conditions is afforded by the fact that the oldest pastures of introduced grasses in the State contain perennial rye as a dominant element, and it has withstood heavy grazing through the years. It grows under a wide range of conditions, and luxuriates in irrigated pastures in the north at Swan Hill and Cohuna. So much has been writtten of late regarding perennial rye-grass that many consider that a pasture is deficient unless it is mainly perennial rye-grass—examination of the pastures in irrigation districts, with the highest carrying records extending over years reveals much of the pseudo-perennial and annual types of rye-grass. Perennial rye-grass shows to best advantage under relatively harsh conditions. At Werribee it is conspicuous on the heavier soils which are not too liberally watered.

Italian rye-grass is recommended because it makes rapid development, and provides feed early in the first season. Only a light seeding is advised, because it may grow so tall as to completely swamp the smaller seedlings of the other grasses and clovers, a development which must be suppressed when it occurs. This grass is readily eaten by stock and makes good growth in winter.

A grass which was not listed in the mixture is *prairie grass*. It may be sown instead of Italian rye-grass or in addition to it. Like Italian rye-grass, it is readily eaten by stock. It makes good growth in winter and, despite what is proclaimed, many of the best irrigated pastures in the State show an increasing proportion of these two species. This was a notable feature in eleven years' old pasture in the 1932 winter at Werribee. Italian rye-grass and prairie grass are comparatively short-lived grasses; they carry on by reseeding, which becomes possible only under

Intensely grazed irrigated pasture at the Werribee Research Farm.

This pasture which is 17 years old is growing on a heavy clay loam. Perennial rye-grass Kentucky Blue, Cocksfoot, White Clover and Strawberry Clover comprise the sward.

lenient grazing in spring, but the occurrence of these grasses goes a long way to correct the usual shortage of grazing in mid-winter.

Cocksfoot has demonstrated its worth in all the irrigation districts. It is not so exacting as rye-grass in either its moisture or fertility requirements. It assumes a tussocky character unless hard grazed, and is apt to become coarse and unpalatable if allowed to mature, but the short growth of cocksfoot is eaten more readily than is perennial rye. Types of cocksfoot which have developed in old pastures in Victoria and New Zealand are finer and more leafy than imported types, and are to be preferred.

Farmers in many parts affect to despise *Kentucky Blue grass,* but, at Werribee and elsewhere, permanent irrigated pastures containing Kentucky Blue grass have a particularly high-carrying capacity. The grass is eaten in preference to some other species, and the aggressive habit generally attributed to it is not apparent. It makes early growth in spring, but if allowed to mature the stalks become wiry.

Meadow Foxtail and Timothy are grasses of merit. These grasses were sown in the first pastures at the Research Farm. Meadow foxtail has persisted, and in wet places it tends to displace other grasses. It grows well in early spring, but apparently is not very attractive to stock which, on the other hand, are very fond of Timothy. Plots of the several standard grasses at Werribee were opened to stock which persecuted the Timothy, ate cocksfoot readily, but neglected the perennial rye-grass while other feed was available. The omission of Timothy from the mixture recommended is not because of any inferior quality, but because it is difficult to maintain it as an element in mixed pasture. At one or two places in the Goulburn Valley trials with Timothy have been encouraging.

Perennial red clover has not the same value as a permanent pasture element as it has in meadows. It is a rapid grower, readily eaten by stock, but has only a limited life under grazing conditions. After about four years it thins out rapidly, and only odd plants persist in old pastures. In many cases it seeds freely, but does not maintain itself.

Alsike clover is recommended; in the first few years in the development of mixed pasture alsike may become a very prominent feature. Its particular virtue is that it will grow in wet and sour places better than red clover.

White clover is the most valuable clover in the mixture, and the amount existing in a pasture is often a measure of its quality. Proper attention to the pasture is necessary to maintain white clover in a vigorously growing condition, and that means that watering must be regular and top-dressing with superphosphate liberal. There are pastures at Cohuna which are mainly white clover, which carry milking cows at the rate of two or three per acre during the summer months. These outstanding pastures are characterized by the development of wild white clover, which is rapidly spreading in response to good cultural practice.

It is obvious that these wild white clovers of proven worth are very desirable. Unfortunately, no seed is available from local sources. New Zealand white clover, which comes with a certificate as to origin, should be given first preference. It is a strong grower with big leaves and large runners. English wild white clover has undoubted superiority over seed from Scandinavian sources. In growth it is characterized by a mat of fine runners with smaller leaves.

Subterranean clover is proving a wonderful agent in the development of Australian pastures. It is destined to play a big part in irrigation districts where the available water is insufficient to maintain white clover, and it is included in the mixture recommended, because in growth habit it is complementary to other species. It is an annual, but maintains itself by re-seeding each year, and produces an abundance of growth in early winter and spring. It dies down in summer, but the dried material and abundant seed are eagerly eaten by stock. This, however, is in patches, and it is obvious that where subterranean clover is abundant the summer production is restricted.

It is admitted that in irrigation districts subterranean clover has proved aggressive, and that a subterranean clover dominant pasture is not the best, but the amount of subterranean clover present in a pasture is a reflex of watering methods. White clover in a mixture will assert itself if regular and adequate watering is carried out.

Strawberry clover does not give a great bulk of feed, but the quality of its herbage is very high, and it is eagerly eaten by stock. A light seeding may establish sufficient plants to ensure its spread. It withstands intensive

[*Continued on page* 129.

The Sheep Industry

No. 9—Infectious Eye Disease of Stock

By W. D. Shew, B.V.Sc., Veterinary Officer

INFECTIOUS eye disease of stock is very prevalent at certain times of the year in all parts of Australia. This disease may be described shortly as an infectious inflammation of any or all of the structures of the eyes of cattle, sheep, and horses. It is liable to recur and, if neglected, may spread to all contact animals. In advanced cases, in the absence of treatment, it may cause total and permanent loss of sight.

The disease occurs in two forms—

(*a*) *Simple inflammation* of the mucous membrane of the eye or conjunctivitis; and

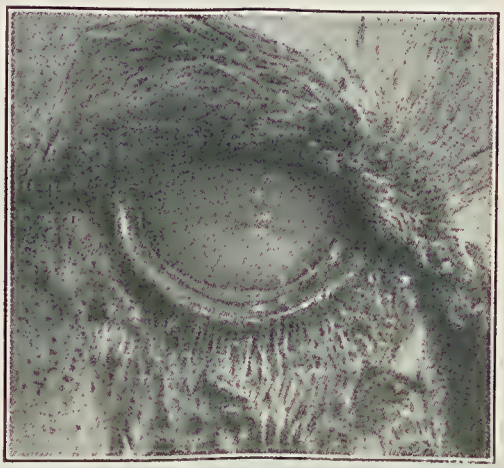
(*b*) *Periodic or specific ophthalmia,* a specific inflammation of the whole of the structures of the eyes of animals.

Simple isolated cases of conjunctivitis are sometimes mistaken for the above infectious disease. These may be caused by the presence of a foreign body such as a piece of chaff, or may have been produced from a blow or some such injury.

Symptoms.

The first signs of conjunctivitis or ophthalmia are redness and swelling of the mucous membranes lining the eyelids, excessive discharge of tears, and a tendency to keep the eyelids shut. In a few hours' time these symptons become aggravated, and a profuse discharge of tears takes place from one or both eyes.

This discharge is sometimes blood-stained and soon changes to a thick, purulent, whitish or yellowish stream, which collects in masses inside the lids, along their edges and down the cheeks, glueing together the eyelashes and lids. The discharge scalds the skin of the face down which it trickles, mats together the hairs and, if neglected, removes the hair, leaving a raw inflamed surface.



Eye of an affected Sheep showing early ulceration. Note the accumulated dry discharge below the eye.

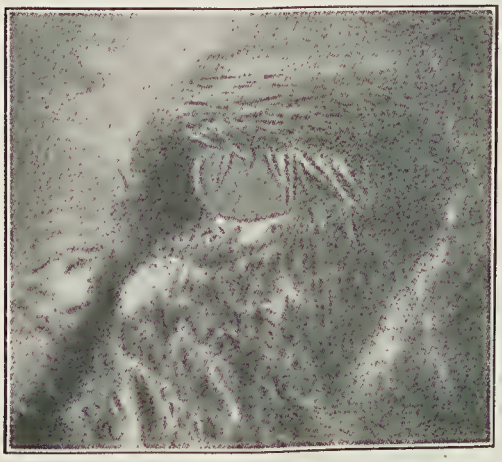
When the lids are separated, the membranes surrounding the eye have a deep red appearance, are covered with pus, and appear greatly swollen and inflamed. The haw (membrana nictitans) in the inner corner of the eye is very prominent and enlarged, and projects over the eyeball.

In many cases the eye appears opaque or milky, whilst in advanced cases ulcers appear, and these may cause perforation and loss of the eye. In other cases, the ulcers heal and cause scars, with contraction of the pupil and interference with the sight. In severe cases the animal becomes very feverish and depressed, and isolates itself from its fellows. The appetite becomes greatly impaired, and condition is rapidly lost.

The disease is spread by the discharge from an infected eye coming in contact with the eyes of other animals. There is no doubt that flies also carry the infection from one animal to another, and thus help to spread the complaint.

Treatment.

In treating this disease, it is necessary in the first place to make quite sure that no foreign body is present such as a piece of chaff which may be found imbedded in the membrane covering the eye itself. Any foreign body can be removed with a small pair of forceps if available, or the tip of a feather which has been immersed in boiling water for a few minutes.



Eye of an affected Sheep. Note that the cornea is quite opaque and the eylashes are gummed together with lacrimal secretion.

Any affected animals should be immediately isolated and, if possible, enclosed in a cool, dark stable. The affected eye and surrounding parts should be thoroughly cleansed with a solution of boracic acid or common salt, two teaspoonfuls in 1 pint of warm water. The eyelids should be smeared with boracic or zinc ointment to prevent the collection of discharge, and the skin below the eye down which the discharge pours must be well smeared with vaseline or lard to avoid scalding, loss of hair, &c.

By means of an eye dropper, a few drops of the following lotion should then be instilled into the affected eye. This should be repeated once or twice a day at least, but more often if possible, especially in the case of valuable animals:—

Sulphate of zinc	..	5 gr.
Distilled water	..	1 oz.

In advanced cases, the above may be replaced by—

Nitrate of silver	..	2 gr.
Distilled water	..	1 oz.

or by a 4 per cent. solution of protayol used as eye drops, as above.

Recovery will be hastened by keeping the eye covered with a shade. This shade can be made with millinery wire, as in the frame of a woman's hat. It should be made to stand well away from the eye. The outer edge of this frame is then bent carefully so as to fit closely the shape of the head round the eyes, so that all dust, light, &c., are effectively excluded. This frame is then covered with some dark green material and, if fastened to the headstall, will be firmly maintained in place.

In severe cases or when valuable animals are affected, a qualified veterinary surgeon should be consulted immediately, as treatment further than that described above can be carried out only under professional supervision.

If treatment is adopted in the earliest stages the affected eye should soon lose its opaque appearance and complete recovery take place, i.e., unless ulceration has already taken place in which case permanent, partial, or complete interference with the appearance or sight of the eye may ensue.

Those cases showing signs of fever, loss of appetite, and much depression should receive special attention. They should be well cared for and, if necessary, rugged to maintain body warmth. A purgative drench is advisable, and the diet should be very light and of a laxative nature; green feed only should be given if obtainable.

Stock-owners are warned of the danger of blowing powders such as soda, lime, &c., into the eye, and more especially of the unfortunately rather common practice of blowing powdered glass into an animal's eye. These practices inflict much suffering, considerable damage to the delicate structures of the eye, and often cause total blindness.

Wimmera Wheat Tests

Variety Trials at Longerenong

CONDUCTED by the Department of Agriculture in co-operation with the Council of Agricultural Education, the experimental work carried out at the Longerenong Agricultural College has yielded much valuable information. The plots were first established during 1912, and since then many investigations on varieties, manurial trials, cultivation practices, and other questions associated with wheat-growing have been carried out.

In the wheat variety trials last year very satisfactory results were obtained. The season commenced well, and conditions were most favorable for the final cultivation of the fallows and for the subsequent seeding of the crop. Good rains followed, the total for the year reaching 17 inches, and in spite of dry spells during the spring excellent yields were harvested, Free Gallipoli giving the abnormally high return of approximately nineteen bags per acre.

The variety trials during the past season were more extensive than usual. In the main section thirteen varieties were tested against the standard Federation, and in subsidiary sections sixteen of the most promising crossbreds were sown. All varieties were repeated in five replicated blocks, and were sown about the middle of June on typical black Wimmera soil, at the rate of 75 lb. of seed and 1½ cwt. of super. per acre. The following yields were obtained in the standard variety section:—Free Gallipoli, 56.9 bushels per acre; Ghurka, 56.7 bushels per acre; Mogul, 55.5 bushels per acre; Federation, 54.0 bushels per acre; Wannon, 52.9 bushels per acre; Nizam, 52.4 bushels per acre; Sepoy, 52.4 bushels per acre; Penny, 48.7 bushels per acre; Rajah, 44.6 bushels per acre; Wandilla, 44.2 bushels per acre; Nabawa, 44.0 bushels per acre; and Ranee 4H, 43.5 bushels per acre.

The highest yields last season were given by Free Gallipoli, closely followed by Ghurka and Mogul. It is interesting to note that these varieties yielded in the same order at the top of the list in the departmental plots at Salisbury. Grouping the varieties according to their time of maturity, it will be seen that those which mature quickly, such as Ranee 4H, Nabawa, and Rajah, have given smaller returns than the later-maturing varieties, Free Gallipoli, Ghurka, Federation, and Wannon. In some less favorable seasons, the early maturing varieties have had the advantage, as in 1931, when Rajah gave the highest return.

The average yields of those varieties which have been included in the replicated trials during the past six years are shown in the following table:—

VARIETY TRIALS, LONGERENONG.
AVERAGE RESULTS FOR SIX YEARS.

	Bushels Per Acre.
Ghurka ..	.. 34.7
Free Gallipoli ..	.. 34.0
Nizam ..	.. 33.5
Mogul ..	.. 33.4
Wannon ..	.. 33.1
Federation ..	.. 31.7

Over a period of years, the only variety to yield better than Free Gallipoli is Ghurka, a comparatively new wheat bred at the State Research Farm, Werribee. Its chief characteristics, apart from its ability to yield well, are a very short straw, shorter even than Wannon, and its free stripping qualities. For these reasons it should be of considerable value to Wimmera farmers, though as yet it has not been grown very extensively.

The figures show also that Free Gallipoli has outyielded Federation by more than two bushels per acre. For many years Federation has been regarded as the standard variety in the southern Wimmera, but in recent years Free Gallipoli has displaced it in popular favour. Nizam and Wannon, which are also grown to some extent on the black plains, gave yields in the tests almost equal to that of Free Gallipoli.

New Crossbreds.

Of the sixteen new crossbreds being tested specifically for their suitability to the black plains, the yields of three exceeded by more than 3 bushels per acre that given by the standard variety, Federation. The pedigrees of these crossbreds are Gallipoli x Graham, Major x Ranee, and Rajah x Gallipoli, and they will be subjected to further tests during the next few years.

Impaction in Cattle

Precautions in Dry Areas

By R. N. Wardle, B.V.Sc., Veterinary Officer

AS the summer season advances reports of cattle suffering from impaction in some form are received in considerable numbers. It will be my aim in this article to point out how farmers, in the Mallee particularly, should take certain precautions during the dry period in an endeavour to prevent cattle from becoming impacted.

Before describing the complaint, it is necessary that the reader should be made conversant with some anatomical points and physiological facts in connexion with digestion.

Cattle belong to the group known as ruminants or cud-chewers, and it is important to remember that such animals invariably eat coarse fodder which is not masticated very much at the time of eating. The food passes down the oesophagus or gullet into the rumen or paunch where it is churned about by muscular contractions of the walls. When finished eating the animal rests—often lying down—and commences to ruminate; in this act a bolus of coarse fodder is regurgitated or brought up the oesophagus into the mouth where it is rechewed in a most painstaking fashion and then swallowed again. At the same time, finer particles of the ingested food, together with that re-masticated, pass on to the other stomach compartments—the reticulum and the omasum, known respectively as the honeycomb and the bible.

Ingesta in the reticulum is invariably in a more or less fluid medium, whilst that in the bible, although moist, is not actually mixed with fluid.

The bible is a spherical compartment from the walls of which a series of folds or leaves hang towards the centre. Some of these folds are deep, others narrow, and the ingesta lies between them, and is moved about by their contraction.

The reticulum has a honeycomb-like lining, and it is in this organ that nails, wire, and other pieces of metal collect.

The fourth and last compartment is the true digestive stomach, and is known as the abomasum, and from it proceeds the intestine.

The greater part of the abdomen in cattle is taken up by the stomach compartments, of which the paunch is by far the greatest in volume.

The paunch and the bible are the two organs which become impacted.

Symptoms.

The animal is first noticed to be dull and listless, with little activity, and disinclined to move with the other stock; if a milker, the supply diminishes considerably, the appetite falls off, rumination ceases, and although there is generally evidence of a fair amount of food in the paunch, there is a general appearance of the flanks being drawn or tucked up.

At first manure, more or less normal, may be passed, but as the days drag on, the conditions become aggravated, the animal loses its condition, milk secretion ceases, appetite is completely lost, and any manure passed is hard and dry.

At this stage the temperature rises three or four degrees from the normal, that is up to 104 or 105 deg. Movement is often accompanied by grunting, thus giving the false idea of some lung trouble. The patient naturally becomes weaker, and if inflammation is considerable may die a rather painful death. Until extreme weakness operates the patient prefers to stand rather than lie down.

Post-mortem Examination.

Despite the fact that the beast had eaten little for the several days of illness, post-mortem examination shows that the paunch has a considerable amount of food in it. In true impaction the bible is the real seat of the trouble. This organ, instead of being of firm, doughy consistency, is hard, at times being almost rock-like. Often it is impossible to drive a knife into the mass.

Inside the organ the ingesta or food material is found to be very dry, and can be taken out in thin layers on each side of which adheres the black, horny lining membrane which has

become detached from the leaves. In some cases the lining membrane of both the bible and the true digestive stomach shows evidence of inflammation. The intestine is generally rather empty of faecal matter, except that there may be masses of dry dung in the rectum.

In certain cases the digestive tract appears more or less normal, and it may be that the condition had been relieved by the administration of medicines. Death may have been brought about by a pneumonia caused through material being inspired from the mouth during drenching. Lesions show as solidified portions of lung in which are centres of yellowish pus; sometimes a more liquid pus shows in the small bronchial tubules. Cases of impaction have been discovered on post-mortem to be due to some foreign material such as rope fibre, sacking, &c., or the foetal membranes or afterbirth.

Treatment.

Treatment must commence as early as possible, and be continued beyond the initial drench if relief be not obtained. As a first drench it is recommended that the following be used:—

Epsom salts—1 to 1½ lb.
Common salt—2 oz.
Ground ginger—1 dessertspoonful.
Treacle—½ lb.
Lard or butter—1 lb.
Thin oatmeal gruel—1 quart.

The lard is melted and mixed in the drench. When cool enough to administer it will be found that the lard or butter is still liquid, but it is advisable to keep shaking the drench whilst administering. This should be followed in 24 hours with 1 pint liquid paraffin which may be repeated each day if necessary. If the stage is reached where hard, dry manure is present in the rectum, such may be removed by the hand after which warm soapy water enemas should be given.

Every effort should be made to induce the patient to eat and to ruminate. Green feed is best; grass hay is good; sloppy bran mashes are nutritious; sometimes it pays to give gruels even if they have to be given as drenches. The longer fodders act as stimulants to rumination.

All drenching must be done carefully, particularly with a sick animal, as there is often reluctance and partial inability to swallow. In these cases infected material may be passed down the wind pipe to the lungs, and this may cause pneumonia.

Further treatment consists in giving medicine that will stimulate the muscular walls of the digestive organs and also help to promote rumination.

The following prescription is recommended:—

Powdered red cinchona bark ..	1 oz.
Tartar emetic	1 oz.
Powdered nux vomica	3 oz.
Powdered carbonate of ammonium	3 oz.
Powdered gentian root	4 oz.

Mix and divide into twelve powders.

One powder to be mixed with a little treacle just before use, and pasted on back of tongue with a flat stick each morning and evening.

Cause.

Errors in feeding are obviously the cause of the trouble. Though it usually occurs in the dry months when feed is dry and fibrous, it may occur at any time of the year if the fodder or herbage be of a rough, coarse fibrous nature; even an excess of stalky lucerne may bring about simple impaction.

Combined with this reason, it is evident that in some districts cattle, particularly milking cows, do not receive enough water. Often the quantity of water cattle will drink is not realized, and where they have to be driven to water once or twice a day it is certain that they will not be able to take a normal amount of fluid to keep the system in order. All available moisture is absorbed from the ingesta, leaving it dry, and thus giving rise to the first stage of impaction.

A simple impaction or stagnation of food often occurs where cattle are hand-fed, especially when chaff is given. Chaff generally is cut too fine for cattle; the finely-cut fodder lies in the paunch, and the necessary stimulus to induce rumination is not there, and once rumination ceases the food in the paunch will not pass on to the other stomach compartments.

Cases of impaction frequently occur through the ingestion of material having no food value, such as eucalypt leaves and other litter. The eating of material like this by cattle is due to a depraved appetite resulting from a mineral deficiency in the system. As an example of this, manure-contaminated straw is often most greedily eaten in large quantities with a resultant impaction.

Prevention.

Firstly.—Every endeavour should be made to conserve an adequate water supply on each property and in as many paddocks as possible; in addition, there should be a trough in or somewhere near the cowyard.

Where these conditions cannot be carried out, they should be kept in mind, and every endeavour made to see that the milking cows get water several times a day during the dry-feed period.

Secondly.—When chaff is being cut for cattle it should be in lengths of about 1 inch; this will tend to keep the animals chewing the cud. Oaten hay or chaff is not an ideal food for cattle, and a ration equally as nutritious would be obtained if a good sample of straw were chaffed long and balanced by the addition of crushed oats, bran, or other concentrate. Lucerne chaff should be available in some parts of the Mallee at a reasonable cost, and could be used as an adjunct to the ordinary fodder. Each afternoon sufficient chaff for a day's use should be damped with a mixture of molasses in hot water, of any dilution up to equal parts of each, covered with bags, and used the following day. Molasses is an excellent corrective during dry feeding, and may be fed up to the rate of 5 lb. per head.

Thirdly.—Feed ensilage during summer. The lack of green feed in the dry months is thereby remedied. It is advised that the ensilage be made from the excess of spring grasses and self-sown crops. I cannot do better than quote some remarks on this subject published last year by Mr. H. A. Mullett, the present Director of Agriculture. He states—"For making silage in the Mallee the pit method is recommended. The pit should be scooped out on a well-drained site. The size will depend on the amount of silage to be conserved. The side walls should be kept perpendicular, and the ends made with a slope of 1 in 3 to enable the drays or wagons to be drawn through the pit when filling takes place. The best stage for cutting the crops is just after the ears have appeared, and no more should be cut at one time than can be placed in the pit. The material must be packed as closely and tightly as possible, as its preservation depends on the exclusion of air. The sheaves should be placed lengthwise in the pit and the bands cut. The passing of the wagons over the material already in the pit will help to compact it. The filling of the pit should be completed with as little delay as possible, and when the pit has been filled to slightly above ground level work on it should cease for two or three days to allow the silage to settle. Filling may then be resumed and the material added until it is about 4 feet above the surface at the centre with a gradual slope towards the ends. It is a good plan when filling above the surface level to overlap the ends of the sheaves about 6 inches over the sides of the pit. If this is done it prevents undue shrinkage away from the walls when settling takes place. Another interval of several days should be allowed to elapse, and the stack again built up to a height of about 4 feet before finally covering with earth to a depth of 9 to 12 inches. It is very important to have the pit well filled, and the covering of earth should not be put on until it is considered that the material has settled thoroughly."

If some other fodder be available, 30 lb. of ensilage is a fair ration for a dairy cow, and if fed during the period when there is no green feed will reduce the incidence of impaction cases to a minimum.

Fourthly.—It is recommended that at intervals of four weeks between December and March, the saline drench—without the lard or butter—mentioned previously, be administered to each beast.

Fifthly.—This recommendation, although given last, is by no means the least in importance. Always have before the cattle a quantity of mineral mixture. The formula recommended for use in dry areas is as follows:—

Stock salt	60 lb.
Boneflour	30 lb.
Sulphur	5 lb.
Epsom salts	3 lb.
Sulphate of iron ..	1 lb.
or	
Stock salt	75 lb.
Di-calcic phosphate ..	15 lb.
Sulphur	5 lb.
Epsom salts	3 lb.
Sulphate of iron ..	1 lb.

The ingredients of the mixture can be obtained from the storekeepers or chemists throughout the country and mixed together on the farm, or the complete mixture may be obtained from certain stock-food or chemical firms.

This mineral mixture should be placed in boxes or troughs, both in cowyard and paddock. Roofed receptacles should be used so as to

[*Continued on page 129.*

Millewa Fallow Competition

Report of the Judge—A. J. Vasey, B.Agr. Sc., Cereal Research Officer

Judging a Fallow.

ON most of the farms inspected in the fallow competition conducted by the Millewa Agricultural Council clearing and subdivision have been practically completed, and the farmers are settling down to increase production by improving yield per acre. The methods available to the farmer to effect this improvement in yield fall under three main heads—cultivation, manuring, and variety, and it is with the first of these that we are more particularly concerned in this report.

The essential principles underlying fallowing remain the same for all districts, though the methods of cultivation by which the desired result is achieved may vary with district and soil type. Among the competitors in this competition there was a widespread appreciation of this fact, and the many excellent entries in the various sections were a tribute to its intelligent application.

Under Victorian conditions generally the aim in fallowing is to prepare a well consolidated seed-bed underlying some 2 to 2½ inches of surface soil reduced to a suitable tilth. The soil conditions thus provided are the best for the conservation of moisture and the elaboration of plant food. Once established it is essential that these reserves be protected by adequate control of weed growth. Thus after the early workings, under Millewa conditions, any further cultivations given the fallows should be only those necessary to keep them clean of weeds.

The preparation of a satisfactory surface tilth presents little difficulty in the Millewa—

Sheep on Mallee Fallows assist Soil Consolidation.

Sheep on Mallee Stubbles.

rather the opposite—and owing to the ever present problem of drift a keen judgment is necessary in determining the time and manner of the cultivations necessary for adequate weed control without making the surface soil too fine.

Many satisfactory fallows were prepared this season by an early ploughing in June followed by two cultivations, one in August and one in September. Indeed, where sheep were available the earlier cultivation sometimes was omitted with advantage. Of the entries inspected in the competition no great variation in soil condition was noted, but in freedom from weed growth they differed considerably. The workings mentioned above might be taken as the standard practice throughout, and the weed infection varied with the efficiency with which the same operations had been carried out on different farms. Probably the greatest advantage gained from the running of sheep was the way in which their use had increased the efficiency of the workings given so far as weed control was concerned. Judicious grazing early in the season improved the "turn under" at ploughing time, and later, kept weeds down to such a size as allowed the cultivator to make an effective kill.

There is a well-founded opinion in this district that in most seasons cultivations later than September are dangerous, and that scattered summer weeds are better dealt with by allowing the sheep to have access to the fallow. This can only be regarded as very sound practice. There are some species of weeds that cannot be dealt with by this means (e.g., bitter melons), and in their case a day's energetic work with the hoe can achieve much. Several instances of such a fallow cleaning were observed in this competition.

While much can be done in reducing the incidence of "take-all" in the wheat crop by keeping the preceding fallow clean of weed host plants such as barley grass, another means of increasing the resistance of the crop to the disease is sometimes overlooked This is by soil consolidation which is assisted so

A Twin-type Stump-jump Skim Plough.

materially by sheeping the fallow again and again.

The introduction of sheep to every block in the district is probably a development of the near future, and while the individual flocks will be small the total for the area will be large. It would appear to be desirable that the sheep be obtained in big lines of the same type, rather than in individual purchases of small numbers. Depot shearing undoubtedly will come, and such a purchase as that suggested would be a great advantage in the classing of the future clip. This provides but another opportunity for expression of that corporate spirit which the farmers of this district have shown in so many of their other activities.

The Competition, 1932.

The competition this year was for fallows only, and was judged in three divisions as follows:—Meringur, 6 entries; Werrimull, 9; and Merrinee, 11.

DETAILS OF AWARD.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Maximum Points	**25**	**25**	**25**	**25**	**100**
1. *Merringur.*					
E. Ruchel ..	23	24	22	23	92
N. A. Dennis ..	23	23	23	22	91
E. Sellars ..	22	22	24	22	90
A. W. Fletcher ..	22	22	20	21	85
A. E. Found ..	22	22	19	20	83
H. A. Schilling ..	19	20	19	19	77
2. *Werrimull.*					
C. Wakenshaw ..	23	23	23	22	91
H. Scott ..	22	23	23	22	90
F. H. Baker ..	22	23	22	23	90
F. G. Hancock ..	23	22	22	21	88
R. L. May ..	20	22	24	21	87
E. Adams ..	21	20	24	22	87
G. J. Cameron ..	22	21	22	21	86
J. A. Modra ..	21	22	19	21	83
J. A. Sullivan ..	20	20	18	18	76
3. *Merrinee.*					
E. H. Walker ..	24	24	23	24	95
R. R. Bromley ..	22	23	22	22	89
L. Rogers ..	23	20	23	22	88
S. H. Bennett ..	22	22	22	22	88
A. W. Higgins ..	22	20	23	22	87
S. Higgins ..	22	20	23	22	87
J. E. Hodges ..	22	20	21	22	85
C. N. Tennant ..	20	20	19	21	80
G. D. Rogers ..	19	19	23	19	80
T. Smith ..	20	19	19	18	76
J. Smith ..	19	18	18	17	72

There are thus three sectional winners—Meringur, H. Ruchel; Werrimul, C. Wakenshaw; and Merrinee, E. H. Walker. Mr. Walker gains first place in the whole competition. His entry was a truly excellent piece of work. The paddock had been ploughed in June to 3 inches deep, harrowed in July, and scarified in September. The scarifier had made a good job of the weeds, and the seed-bed was in very good order. This fallow had been sheeped whenever necessary. Neither Mr. Ruchel nor Mr. Wakenshaw had the advantage of sheep in the preparation of their fallows, which had in consequence received two cultivations after ploughing, and still the weeds were not so well beaten as in the case of the winning entry. Mr. Dennis, second at Meringur and equal with Mr. Wakenshaw for third in the combined event, had a very good fallow which lost points for unevenness in seed bed.

Though this report deals with a fallow competition only, the opportunity is being taken of giving some cropping advice to competitors in the form of a summary of the results from the departmental plots at Werrimull.

Cropping Recommendations.

In regard to varieties, it may be pointed out that Ranee 4H has performed excellently, and may well be made the standard variety of the district. It is early enough to be extremely drought resistant, yet stands well and does not shake, and could safely be sown on at least half the area cropped to wheat on the average farm each year. It should be sown either early or mid-season. Of the early varieties four have almost equal claims to consideration. They are Rajah, Waratah, Nabawa, and Gluyas. These all have their weak points. Rajah and Waratah shake, while Nabawa and Gluyas are troublesome in the straw, especially when sown early on fallow. Rajah and Nabawa have the special merit that they are resistant to flag smut, but even so, it appears they would serve best when confined to late sowing or stubble land, comprising at most one-quarter of the area sown.

Of the late varieties Ghurka is outstanding, and deserves an extensive trial. This variety should prove successful wherever Sepoy has been grown in the past.

Convincing demonstrations of the value of early sowing were seen throughout the Millewa this year, and in future every effort should

Working with the "combine."

be made to sow as large an area as possible in April and early May. Starting in April the lighter country should be sown first with the late varieties, as Ghurka. Ranee 4H can well be sown next on the mixed country, while any large area of flat should carry the early varieties—as Rajah—and be sown last.

Nothing much is to be gained by increasing the rate of seeding for early and mid-season sowing above 45 lb. per acre. For late sowing of early varieties an increase of 10 to 15 lb. in the seed rate is desirable, particularly in the case of Nabawa.

In the last two seasons in which the autumn weather conditions have been extremely favorable the use of superphosphate has contributed little to higher yields. Such seasonal conditions are not the general rule, however, and it would be wise to make a dressing of some 40 lb. per acre a standard practice.

Irrigated Crops (*continued from page* 119).

grazing; in fact, it is not favoured if lenient grazing is practised. Strawberry clover shares with alsike, a liking for low-lying soils liable to excess wetness, and yet it has a remarkable vitality under dry conditions. It is partial to salty soils, and should not be omitted from mixtures sown where the soils have a high salt content. It has a wide sphere of usefulness, and is growing luxuriantly under irrigation at Cohuna and Swan Hill. It is a splendid complement to paspalum.

Despite all that has been said, mixtures may be varied, but it is emphasized that the pasture which will develop is governed by the conditions under which it is grown, and under irrigation particularly the character of the pasture is a reflex of the farmers' management.

Impaction in Cattle (*continued from page* 125).

protect it from the rain. When stock are being hand-fed the mixture may also be added to the daily ration at the rate of 3 oz. per head per day. The use of such a mixture will supply the animal with essential mineral constituents, such as phosphoric acid and lime, of which our soils are deficient. These constituents are necessary for the animal, particularly for milking cows and growing stock, and if they are not receiving them in sufficient quantities there is certain to be a loss of tone and resistance to illness and disease is lowered. Hence we find that the continued use of a bonemeal or di-calcic phosphate mixture will act as a preventive of impaction during the dry times.

In addition, its use prevents the depraved appetite, which is due to the craving for these minerals. To satisfy this craving the animal affected will chew bones, litter, manure, and decomposing refuse—a diet that is obviously very harmful.

Meadow Hay and Pastures

Central Gippsland Competition

Report of the Judge—E. D. Cameron, B.Ag.Sc.

IN conducting its annual Meadow Hay and Pasture Competitions, the Central Gippsland Agricultural, Horticultural, and Pastoral Society has wisely adopted the attitude that, in promoting such competitions, it is assisting the dairy-farmer to improved practices by means of which he may increase his production.

Careful management in grazing pastures augmented by fodder conservation is the first step to be undertaken in this direction. By means of regular grazing and resting, economic top-dressing, harrowing, ensiling and hay-making, the production from the sown-down pasture is greatly increased. Local conditions will affect each practice, but experience will soon indicate the lines to be followed and bring about the adoption of standard methods to suit the district.

In the conservation of reserve fodder for the leaner months it becomes a question as to which is the best and most economical method to adopt, but the cutting and stacking of meadow hay is one which claims consideration in all districts and under all conditions, and it is hoped that by stimulating interest and by interchange of ideas on methods and practices adopted by individual farmers in the district these competitions will be the means of raising the general standard of the practice of hay-making.

Meadow Hay Section.

In the meadow hay section the exhibits generally were of a high standard, and can be divided into three main groups:—

1. Perennial rye-grass and subterranean clover, or, in the hill country around Thorpdale, cocksfoot and subterranean clover, a crop capable of yielding a heavy cut of hay. The "smothering" effect of subterranean clover is most marked, with the result that the crops are usually very clean and of good general appearance.

2. Perennial rye-grass and cow-grass.—These plots, although of high-yielding capacity, were not so clean or of such good general appearance. The advantages of a crop of cow-grass and perennial rye grass are threefold—

(*a*) By its more upright growth it is found easier to handle than a crop of subterranean clover whose stems usually intertwine and render cutting a difficult process.

(*b*) The characteristic of late maturity increases the possibility of harvesting the crop during favorable weather so that losses usually are not so great.

(*c*) Cow-grass, or red clover, after harvesting for hay will produce an aftermath which will be found very useful either as summer grazing or as a second meadow hay crop.

3. The third group into which the meadow hay crops may be divided is one consisting of perennial rye-grass and white clover with their associates. This type occurs more particularly on the flats around Yarragon and Trafalgar, and usually is obtained by shutting up a pasture for the purpose of cutting hay. Under these circumstances such a crop is never particularly heavy, although it gives a fine quality hay.

The Exhibits.

The first prize was awarded to a field exhibited by Mr. W. Smith, of Trafalgar. This was sown down in the autumn of 1930 to a mixture containing 2 bushels of perennial rye-grass, 3 to 4 lb. of subterranean clover and some paspalum. It has been top-dressed each year with 1 cwt. of super. per acre. Whilst subject to grazing, the field has been harrowed and topped with the mower regularly. At the time of judging the paddock had been closed to stock for from eight to ten weeks, and the crop consisted of a heavy stand of perennial rye-grass and subterranean clover in good proportion with paspalum showing through in many places. It was a crop which should produce a good quality and palatable hay. The weeds were few, and were mainly

goose-grass with odd plants of sorrel. The general appearance was good.

Mr. E. W. Calvert, of Thorpdale, exhibited a field which was sown down four years ago to perennial rye-grass, cocksfoot, and subterranean clover, and which, at the time of judging, consisted of these pasture species in the approximate proportion of 20, 30, and 50. The field has not been top-dressed regularly, and when under pasture conditions harrowed only very occasionally. The general appearance of the field was good, and weeds, consisting of goose-grass and an odd thistle, were rare.

The field placed third was entered by Mr. E. Elliott, of Yarragon, and was sown down in April, 1931, with perennial rye-grass at the rate of 1 bushel per acre, and cow-grass at the rate of 14 lb. per acre. Two cuts were obtained in the first year, one in December, 1931, and the second in February, 1932. In August, 1932, it was top-dressed with approximately 1 cwt. of super, per acre. When judged the field was "cow-grass dominant" with perennial rye-grass to the extent of some 30 per cent. Weed growth consisted of odd thistles and a little goose-grass.

Mr. A. Tyrell's field of cow-grass and rye-grass was almost identical with that shown by Mr. E. Elliott, the only difference being in the amount of weed growth present.

The exhibit of Mr. A. Horsnell, of Coalville, was a good stand of subterranean clover and cocksfoot, with knotted, yellow suckling and cluster clovers present. The field gave promise of a heavy yield of fairly good quality hay.

Messrs. Manley and Sons, also of Coalville, exhibited a field containing rye-grass, cocksfoot and subterranean clover in the proportion of 20, 30, and 40, with weeds in the form of fog-grass docks and thistles showing to the extent of 10 per cent. The field was top-dressed twice in 1932, 1 cwt. of super. per acre being applied in the autumn and a similar dressing in the spring. In late July sulphate of ammonia was applied at the rate of 2 cwt. per acre. At the time of judging the field had been closed to stock for eight weeks.

The field shown by Mr. J. E. Cumming was an excellent stand of perennial rye-grass which is to be harvested for seed. The clover content was only moderate, and consisted of white and yellow suckling clovers.

The remainder of the fields were all of fairly high standard, but failed mainly in their capacity to yield a very heavy crop, and were in most cases a little too far advanced for a good quality hay to be cut. It is satisfactory to note, however, that no crop entered could be considered poor, and that all farmers ought to be encouraged by the generally good exhibition.

Meadow Hay Competition.

Name.	Apparent Yield.	Nutritive Value.	Palatability.	Freedom from Weeds.	General Appearance.	Total.
Possible Points	**50**	**20**	**10**	**10**	**10**	**100**
Smith, W.	48	18	9	9	8	92
Calvert, E. W. ..	47	18	9	9	8	91
Elliott, E.	46	18	9	9	8	90
Tyrell, A.	46	18	9	8	8	89
Horsnell, A.	47	17	9	8	8	89
Manley and Sons ..	44	18	9	8	8	87
Cumming, J. E. ..	42	18	9	9	8	86
Matheson, J.	40	18	9	9	9	85
Burgess, W. E. ..	42	17	8	9	8	84
Battley and Sons ..	44	17	8	8	7	84
Kellas, W.	40	17	9	8	8	82
Olsen, B. E.	40	17	8	8	8	81
Mills Misses	38	17	8	9	8	80
Mathews, W.	38	17	8	8	8	79
McCrorey, J.	40	15	8	7	8	78
Jensen, A. G.	38	17	8	7	8	78
Whitton, D.	38	15	8	9	8	78

Pasture Section.

The entries in the pasture section numbered eight, and, with the exception of one or two, were of very high standard.

The first prize was awarded to an old field exhibited by Mr. R. Smith, of Trafalgar. It consisted of a dense, well-grazed rye-grass, white and strawberry clover stand with subterranean clover and paspalum in patches. Cocksfoot was present throughout, but thin. The weed growth consisted of a few odd flat weeds with yellow suckling clover and winter grass also present. The management of the field has been very good. Super. at the rate of 150 lb. per acre was applied in September, and the field has been rotationally grazed throughout the season and harrowed several times. The area was topped with the mower two weeks prior to judging. The general appearance of the field was one of a dense and well-managed stand.

The field exhibited by Mrs. M. O. Payne and awarded second prize was a stand sown in March, 1931, to a mixture containing cocksfoot, rye-grass, and cow-grass, with White

Dutch, alsike, and subterranean clovers—24 lb. of grasses to 14 lb. of clovers. The field contained a very high proportion of clovers which detracted somewhat from its composition. White Dutch in flower was prevalent with odd plants of alsike, subterranean, and cow-grass showing. Of the grasses, perennial rye-grass dominated, although cocksfoot was present. The management of this field also was very good. At sowing the area was top-dressed with super. at the rate of 2 cwt. per acre. In 1932 2½ cwt. per acre had been applied in two dressings—one in autumn and one in September. The pasture has been grass harrowed after each grazing, and also "topped" in rotation when necessary. The field was practically devoid of any weed growth.

Mr. B. E. Olsen's third prize field was a very old stand containing perennial rye-grass, white and strawberry clovers in nice proportion. Fog-grass and flat weeds, however, detracted somewhat from its appearance, while the pasture was inclined to be a little tall with too many seed heads in evidence. The area had been top-dressed with super. at the rate of 2 cwt. per acre in the late autumn, and also with 1 cwt. of sulphate of ammonia in the winter. It had been subjected to rotational grazing throughout the year. Harrowing had been carried on as often as necessary.

The entries of Messrs. Burgess, Young, and Savige, although dissimilar in composition and methods of management were almost equal in final points, and these exhibitors are to be commended on their fields exhibited. The remaining two entries—those of Mr. Cumming and Mr. McCrory—showed some rank patches and too great an evidence of weeds. Detailed awards are shown in the following table:—

PASTURE COMPETITION.

Name.	Composition.	Management.	Density.	Freedom from Weeds.	General Appearance.	Total.
Possible Points	**35**	**25**	**15**	**10**	**15**	**100**
Smith, R.	33	22	13	9	13	90
Payne, Mrs, M. O. ..	30	23	13	10	13	89
Olsen, B. E.	32	22	13	9	11	87
Burgess, W. E. ..	30	19	13	8	13	83
Young, A.	31	21	11	8	12	83
Savige, T. W.	30	18	13	9	12	82
Cumming, J. E. ..	28	17	11	7	11	74
McCrorey, Jas... ..	28	18	10	7	10	72

Index to *Journal of Agriculture* for 1932

The index to the *Journal* for the year 1932 has been printed and copies may be had, on application, from the Department of Agriculture.

Mallee Wheat Tests

Results of Manurial Trials

Mallee Farmers at the Field Day, Walpeup.

TRIALS which have been conducted for many years in different parts of Victoria to test the effect of various manures on the development of the wheat crop have shown that superphosphate, when applied with the seed, usually produces definite increases in the yield of the resultant crop. So outstanding and so general have the results been that it is the exception to find a wheat crop which has been grown without superphosphate.

In the Northern Mallee, manurial trials are being conducted by the Department of Agriculture in three districts—at the Mallee Research Station, Walpeup, on the farm of Mr. G. D. Brydon at Swan Hill, and on the farm of Mr. H. H. Scott at Werrimull. In each case last year the plots were sown during late April and early May under the replicated system, i.e., each series of plots being repeated several times. In addition to the early-sown section at Walpeup, a similar group of plots was sown late, on 10th June. The results obtained are shown in the following table.

NORTHERN MALLEE MANURIAL TRIALS—1932 RESULTS.

—	Walpeup.		Swan Hill.	Werrimull.
	Early Sown.	Late Sown.	Early Sown.	Early Sown.
	Bushels per acre.	Bushels per acre.	Bushels per acre.	Bushels per acre.
No manure ..	23·7	15·8	35·3	30·8
Super. 30 lb. p.a.	30·0	20·9	..	31·4
„ 60 „	34·0	23·7	36·9	29·8
„ 90 „	34·1	24·3	37·7	31·0
„ 120 „	34·8	25·4	37·5	31·7

A review of these figures shows that large increases in yield due to the use of super. were obtained in the experiments at Walpeup. In the early-sown section an application of 60 lb. per acre raised the yield by 10.3 bushels per acre, but heavier dressings did not give any further material increase. In the late-sown section the actual yields were smaller, but the effects of the heavier dressings were more marked.

At Swan Hill, where the spring rainfall was heavier than at Walpeup, the average yield of wheat grown in the unmanured plots was remarkably high, and the applications of super. caused only small increases in the yields.

The experiments commenced at Werrimull in 1932 were conducted on recently cleared country, of which there is a considerable area in the newer Mallee. The results of the trials indicate that there was little or no response to manurial dressings in the plots last year. The exceptionally favorable season for early-sown crops in this district may afford an explanation for this unusual occurrence. The results of experiments for one year only cannot be taken as a guide for general practice.

Oat Variety Trials at Walpeup.

Manurial trials conducted for fifteen years at Carwarp show on the average substantial increases in yield following the use of 30 to 60 lb. of super. per acre.

The average results at the two centres where such trials have been conducted for many years are as follow:—

MANURIAL TRIALS—AVERAGE RESULTS.

—	Walpeup (8 years).	Carwarp (15 years).
	Bushels per acre.	Bushels per acre
No manure	14·5	9·9
Super. 30 lb. p.a.	17·5	12·1
,, 60 ,, ...	19·1	12·6
,, 90 ,, ...	20·1	13·2
,, 120 ,, ...	20·3	..

A comparison of the average results obtained at Walpeup (nine years) and Carwarp (fifteen years) shows that the response by the wheat crops to applications of superphosphate is greater at Walpeup, where the yields are higher, due probably to the fact that the rainfall there is greater than at Carwarp. During the currency of the trials it has been found also that seasonal conditions affect the degree of the responses, emphasizing the importance of long continued experiments as a guide to practice.

The results show that, after taking the cost of super. and the present price of wheat into account, greatest net returns at Walpeup have been obtained from dressings of 90 lb. of manure per acre, while at Carwarp the figures indicate that, under existing conditions, applications of super. in excess of 30 lb. per acre are not likely to give profitable increases in yield.

Farmers inspecting the plots at Walpeup.

Rainbow Wheat Plots

Results of Tests

LAST season's crops at Rainbow showed favorable growth during the early part of the season when they received the heavy rainfall of nearly 13 inches from February to August, and in spite of rather light spring rains, very satisfactory yields were harvested. The favorable seasonal conditions were reflected in the yields obtained in the departmental experimental plots, the returns from which were considerably higher than those obtained during the previous six years. These trials in the Southern Mallee were conducted on fairly typical Mallee red sandy country on the farm of Mr. A. West.

Ghurka and Currawa Wheats in Mallee Plots.

The variety trials with wheat were designed to test seven standard varieties, each of which was repeated five times. The plots were sown on the 10th and 11th May with 68 lb. of seed and 1 cwt. of super. per acre. The average yields for 1932 were as follows:—Nizam, 33.5 bushels per acre; Ghurka, 33.1 bushels per acre; Sepoy, 30.6 bushels per acre; Ranee 4H, 30.4 bushels per acre; Federation, 30.4 bushels per acre; Free Gallipoli, 29.6 bushels per acre; and Penny, 27.3 bushels per acre. The results from any one year, however, cannot be regarded as conclusive, and the choice of variety should be governed by the average figures over the past few years, which are given below:—

AVERAGE YIELDS—FOUR YEARS (1929-32).

	Bushels per acre.
Ghurka	22.3
Free Gallipoli	20.9
Ranee 4H	20.9
Sepoy	20.3
Nizam	20.1
Federation	18.5
Penny	16.8

Ghurka, a short strawed, mid-season to late maturing variety, shows a material increase over other wheats, and since crops of Ghurka have given very favorable yields in surrounding districts, farmers are recommended to make further trials with this variety. Free Gallipoli, at present the standard variey sown in the district, has also given very good yields. The new selection Ranee 4H, an early-maturing variety, has yielded consistently well, and should be used particularly for later-sown areas. One outstanding result of the trials at Rainbow is that Federation and Penny have given yields considerably lower than the other varieties tested.

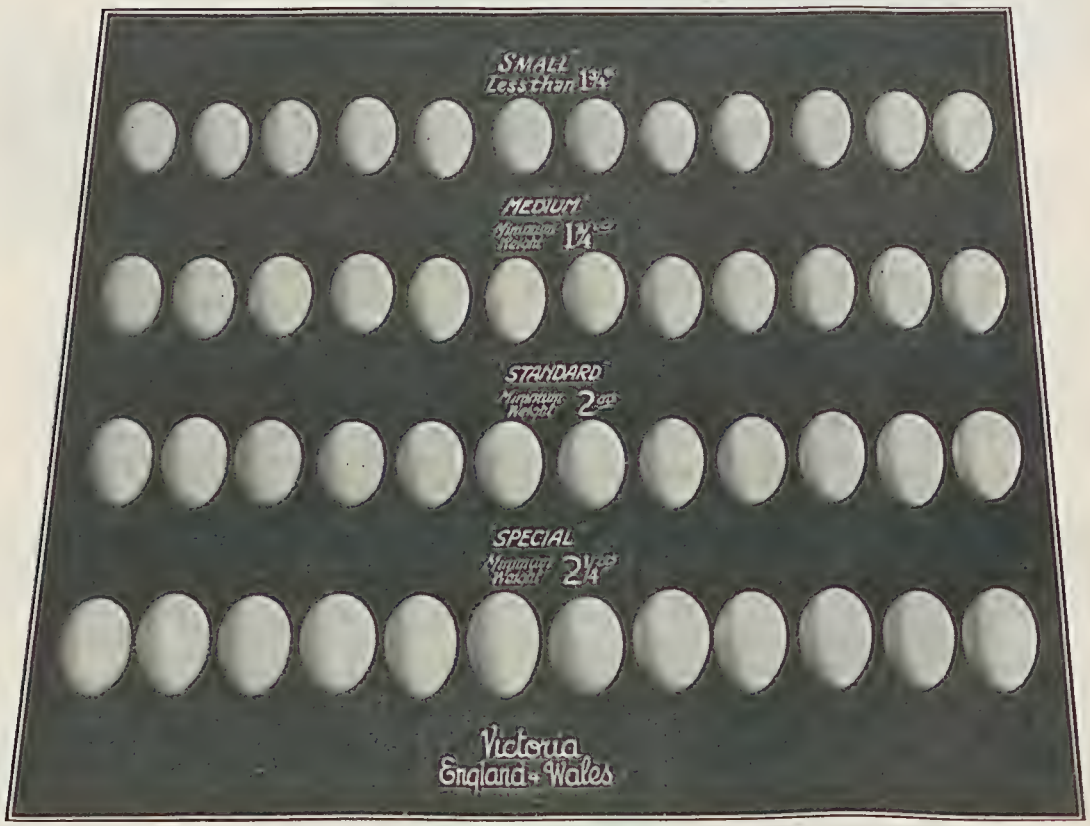
The results from the manurial trials again show that the use of superphosphate has been followed by definite increases in yield. The plots have been designed to test three dressings of super. against no manure, and the series was sown in duplicate. The following figures indicate the effect on the crop:—

—	Average Yield, 1932.	Average Yield, 6 years (1927–32).	Increase over No Manure.
	Bushels per acre.	Bushels per acre.	Bushels per acre
No Manure ..	25·6	12·5	..
Super. ½ cwt./ac.	26·1	13·5	1·0
„ 1 „	27·2	14·7	2·2
„ 1½ „	27·8	15·2	2·7

QUALITY IN EGGS

GRADE REGULATIONS

By W. C. Rugg, Government Poultry Expert



Standard Grades for Eggs.

NOW that regulations governing the retail sale of eggs are in force, it is the duty of all producers to see that retailers are supplied with eggs that will comply with those regulations. The more efficiently the producers do their job, the quicker will be the turnover by the retailer, and the greater the satisfaction of the consumers. This will quickly lead to increased consumption. Every purchaser of eggs from shop, stand, or stall, is entitled to be supplied only with eggs of specified quality and of the weight he or she desires or can afford.

Briefly, the provisions as to quality laid down in the regulations are that:—"No person shall sell any egg unless it is sound and wholesome; on candling the white is translucent and the yolk translucent or but faintly visible. The air cell must not exceed one-quarter of an inch in depth. Chilled eggs must be branded with the word 'chilled,' and the air cell must not be greater than

three-eighths of one inch." Eggs must be sold in the following grade weights:—

"Specials" must weigh not less than 2¼ oz. each.

"Standards" must weigh not less than 2 oz. each.

"Medium" must weigh not less than 1¾ oz.

"Small," all eggs less than 1⅝ oz.

Which Looks the Best?

The proprietor of any shop, stand, stall, &c., where eggs are sold is required to keep the various grades of eggs in separate receptacles and to affix to each a placard, on which shall be printed or written the grade of eggs in plain and legible characters plainly visible to customers. It shall not be deemed to be a contravention of the regulations if any egg sold or described as being a particular grade, weighs 5 per cent. below the weight prescribed, provided that any twelve eggs supplied to the purchaser weigh not less than twelve times the minimum weight of the grade asked for. The full regulations were published in the *Government Gazette* on 7th December, 1932, and are obtainable from the Government Printer.

It is hoped that housewives and other purchasers will insist on being supplied with eggs that comply with the regulations. These regulations were adopted by the Foods Standard Committee only after examining regualtions governing the sale of eggs in a great many countries. That committee has had the matter under consideration from time to time over a period of three years, and the Department of Agriculture fully endorses its action, and is quite sure it is in the best interests of both consumers and producers, and will eventually help to bring prosperity to the industry. A small section of producers has opposed the regulations on the grounds that the grade weights are too high. In this connexion it may be of interest to quote the remarks of Sir Edward Brown, probably the greatest living authority on most matters relating to the poultry industry, when these grades were adopted for the sale of eggs in England under the National Mark scheme. Some producers there were endeavouring to have the weights reduced, and in an article in the *Feathered World*, Sir Edward pointed out that "To deviate from the standards laid down in the grading and marking scheme would be a fatal mistake. The sooner those who have been in opposition to it, on the ground that the standards are too high, recognize the facts of the case and use their undoubted ability and skill to meet the new conditions, the better it will be for them and the nation at large." That was written in 1929. It is very significant that following the introduction of the National Mark scheme, which includes the sale of eggs under grade weights similar to those adopted here, both the production and consumption of eggs in England have increased rapidly. In 1931 the production of eggs increased by 12,000,000 dozen, and consumption increased by more than 26,000,000 dozen. These figures are from the Empire Marketing Board's report. Further increases took place last year, but the actual figures have not yet been received.

Now that eggs are to be sold on a quality basis, the time is opportune for poultrymen to consider the launching of an advertising campaign. Such a campaign, however, should be a serious organized effort to place before the consuming public information as to the great food value of eggs. Spasmodic advertising is of little use. Advertisers of other food commodities have found by experience that frequent repetition of one idea, in news items, exhibits and posters, is the most effective way to induce a number of consumers to buy an article and keep them buying it.

Such an egg selling campaign must be conducted and supported by producers themselves; it is useless for them to wait for some one else to do the job; they must be prepared to plan and carry out their own selling campaign and to foot the bill.

Goulburn Valley Wheat Trials

Results at Shepparton

INFORMATION of interest to Goulburn Valley wheat-growers is contained in the results of the trials conducted by the Department of Agriculture on the farm of Mr. J. M. Phillips, Congupna-road, near Shepparton. The soil on which the experimental plots are located is a reddish-grey loam, typical of many areas in the district.

Good yields were obtained from the plots during the past season. Although the total rainfall for 1932 was only a few points below the average of 19 inches, the falls were concentrated in the March-November period, and crop yields were well above the average.

The wheat variety trials which were sown during the last week in April with 75 lb. seed and 1 cwt. of super. gave the following results:—Ghurka, 37.1 bushels per acre; Currawa x Major x Gallipoli, 35.5 bushels per acre; Ranee 4H, 35.2 bushels per acre; Ranee x Rajah, 32.3 bushels per acre; Free Gallipoli, 31.4 bushels per acre; Federation, 30.1 bushels per acre; Canberra x Hard Federation, 30.1 bushels per acre; Major, 27.8 bushels per acre; Sepoy, 27.0 bushels per acre; Nizam, 26.5 bushels per acre; and Nabawa, 16.9 bushels per acre.

Owing to the early sowing and prolific growth, the crops were very tall, and the low yield from Nabawa was due largely to the lodging of this variety, which was affected in a similar manner in many districts of Victoria during this season.

The average yields of those varieties which have been tested for five years are as follow:—

AVERAGE YIELDS—FIVE YEARS (1928-32).

	Bushels Per Acre.
Ghurka	22.2
Currawa x Major x Gallipoli	21.3
Free Gallipoli	20.4
Ranee x Rajah	20.2
Sepoy	18.9
Nizam	17.4
Major	17.1
Federation	16.6

The outstanding result of the variety trials is the continued success of the comparatively new variety, Ghurka. On similar soils at the Rutherglen Experiment Farm also this wheat has given the highest yields for many years, and it is now recommended for trial as a variety for sowing in the month of May. Because of its short straw, it may not be as suitable as Free Gallipoli for growing on land which is likely to be badly infested with tall-growing troublesome weeds such as thistles. Ranee 4H, which has been tried in these plots for three years only, also yielded well. It matures more quickly than Free Gallipoli or Ghurka, and therefore should be of particular value for sowing after those varieties later in the season. Federation, once the standard wheat in the Goulburn Valley, has now lost popularity, and its performance in experiments both at Shepparton and Waaia is poor compared with several other varieties. In a favorable year Major is capable of high yields, but it has not given high average figures.

Manurial Trials.

The effect of superphosphate in promoting early growth of wheat crops is well known, but the optimum amount of manure which is needed varies with the relation between the cost of manure and the price of wheat. These tests are designed to show the amount of the increase in yield affected by various quantities of super. The plots were sown on 26-28th April with Free Gallipoli at 75 lb. per acre. The results are as follow:—

—	Average Yield, 1932.	Average Yield, 5 years (1928–32).
	bush./ac.	bush./ac.
No Manure	16·8	11·2
Super. ½ cwt./ac.	19·8	12·3
„ 1 „	21·6	14·2
„ 1½ „	20·8	14·1
„ 2 „	20·4	15·1

Taking into consideration the cost of the fertilizer and the value of the increased yield, it is found that the greatest net return per acre was obtained when 1 cwt. of superphosphate per acre was used.

Orchard and Garden Notes

By Edward E. Pescott, F.L.S.

The Flower Garden.

SOWING seeds for winter and spring flowering is now an urgent matter; seeds of Iceland poppies, pansies and viola, sweet pea, calendula, primula, and cineraria are among these. They may be sown in open beds; indeed, the plants will be far more hardy if the seeds be sown this way than if sown in pots or boxes. The sowing may be either in rows or broadcast, and the soil should be light and sandy. No manure is needed in the seed-bed.

After levelling the soil, the surface should be mulched with broken-up decayed leaves or broken dry grass stalks. In large beds, long thin pieces of tea-tree or bamboo may be laid.

Now is the time to reconstitute and top-dress lawns. Light top-dressing of a sandy nature is the best material; if any manure is to be given, it should be applied when the seed is growing strongly. Rake the fresh seed among the top-dressing and water well.

If top-dressing only is to be done, and without seed, then old manure may be used. The existing lawn grass must not be covered; the tips of the grass foliage should always show above the top-dressing.

To give a good growth and appearance to a level and well-grown lawn, sulphate of ammonia may be applied in liquid form at the rate of 1 oz. to the gallon; a gallon would be sufficient for a square yard.

The Vegetable Garden.

Sow seeds of carrot, parsnip, lettuce, cabbage, turnip, cauliflower, sprouts. Seeds of French beans may also be sown for a late crop. Cabbage, cauliflower, and sprouts may follow tomatoes as a rotation; the manure used to grow the tomato crop will generally be sufficient to start the green crop well on the way.

The whole vegetable garden should be given a good dressing of fresh lime or gypsum. Autumn is the best time for this necessary work, so that it is now seasonable.

The Orchard.

Citrus trees on which red scale is to be seen should be sprayed with a white oil, or else they should be fumigated. If spraying be done it should be repeated a month after the first operation. All affected fruits should be destroyed.

The benefits of cross fertilization have been very noticeable in many orchard districts this year. At Kyabram extra heavy crops of pears were produced where trees were planted for interpollination purposes; and it was very evident that heavier crops were produced in the rows where the two varieties were adjacent.

The same result has been noted this year with apples, and although the crop generally is a very heavy one yet where interpollination was considered when trees were planted, the yield is heavier than in those orchards where no thought was given to it. Growers should study the departmental bulletin issued on this subject; and if provision has not already been made late buds may be worked among the trees to give the second variety.

Professional Papers

[This section is devoted to professional papers and articles of a scientific character.]

Drainage Investigations on the Experimental Citrus Grove, Tresco, 1926-31

By Frank M. Read, M.Agr.Sc., Senior Horticultural Research Officer.

The work reported herein has been carried out by the writer under the authority of the Tresco Experiments Sub-Committee, which consists of Messrs. H. A. Mullett, Director of Agriculture, J. M. Ward, Superintendent of Horticulture, J. A. Aird, State Rivers and Water Supply Commission, Frank M. Read, Senior Horticultural Research Officer. The late Mr. S. A. Cook, Citriculturist, was also a valued member. Mr. A. G. Strickland, Horticultural Research Officer, has assisted in field work, and the recording and examination of results. Messrs. J. L. Provan and H. L. Hatfield have also assisted in the field work. The chemical analyses have been carried out by the chemists of the Department under the supervision of Mr. W. R. Jewell, Agricultural Research Chemist.

IN two previous papers which have appeared in the *Journal* of the Victorian Department of Agriculture (1) (2), the problems associated with the non-thrifty condition of citrus trees on the more alkaline soils of the Murray Valley are outlined; and the situation at Tresco in particular is discussed in detail.

The present communication covers a limited aspect of the work which has not previously been published, namely, the results secured from the various methods of tile drainage which have been tried. It cannot be over-emphasized that the significance of the data here set out cannot be fully appreciated unless reference be made to the two previous papers referred to above.

Tile drainage at Tresco was expected to perform two main functions—

1. To permit a leaching out of soil salts in conjunction with flood irrigation;
2. To control the water table which on many groves was found to extend into the root zone.

These two functions are closely interrelated, inasmuch as the copious quantities of water necessary for salt leaching may be expected to develop a water table unless precautionary measures be taken.

From both of these points of view it was desired to study tile drains of various depths and distances apart. Prior to the investigation the general practice in the district was to lay tile drains about 3 ft. 6 in. deep; and a distance of 48 feet between the drains was considered the best practice. In these experiments drains laid at 6 feet, 3 ft. 6 in., and 2 ft. 3 in. have been compared. The cost of digging to these depths has been taken into consideration in deciding the distances apart at which drains of each depth should be placed. The 6-ft. deep drains have been placed 96 feet apart, and some at greater intervals of 192 feet. The 3-ft. 6-in. drains have been placed 48 feet, and the 2-ft. 3-in. pipes 24 feet apart.

These depths and distances, however, were not considered to represent the degree to which such citrus lands could be economically drained; they were merely a basis of comparison. Whether or not such drainage could be economically applied obviously would depend upon its efficiency in restoring and maintaining the health of the trees.

Salt Leaching Effect of Drains.

Common salt (sodium chloride) is the most important salt at Tresco, and in this paper common salt, expressed as chlorine, will be discussed. Complete analyses of drainage and irrigation waters have been made, however, throughout the investigations.

Just prior to the inception of the experiments the concentration of chlorine on the grove was as shown in Table I.

TABLE I.

Concentration of Chlorine in a typical affected portion of the Grove, March, 1926.

Depth of Sample.	Chlorine in Parts per 100,000.
Surface to 6 inches	87
6 inches to 12 ,, ...	70
12 ,, 24 ,, ...	38
24 ,, 36 ,, ...	24
36 ,, 48 ,, ...	14
48 ,, 60 ,, ...	12
60 ,, 72 ,, ...	12

A comparison of healthy and affected groves indicated that the health of citrus trees suffered when the concentration of chlorine approached 30 parts per 100,000 of soil (1), (2).

The salt removed by each drain has been very accurately estimated by measuring the outflow of water, and analyzing at intervals a composite sample of this water composed of aliquot parts from each measurement. Careful weighings of the water delivered by each drain in a definite length of time were made at hourly intervals during irrigation, and at longer intervals subsequently when the drains were running in a steady fashion. No effort has been spared to secure accurate figures for the drainage outputs. Where occasion demanded, hourly measurements have been made continuously throughout the day and night.

To enable these observations to be made, red gum boxes (Plate I) were constructed where each drain opened into a main drain, the main drains being placed at least 1 foot lower than the drains observed. Thus each drain delivered a stream of water into its box, and measurements were made by holding under this stream, for a measured interval of time a weighed receptacle suspended from a spring balance.

Table II. shows the amounts of chlorine, in pounds, removed per acre by the three different drainage systems.

It will be seen that over five years with irrigation practices varying from year to year, according to seasonal conditions, the 6-ft. deep drains 96 feet apart removed practically the same quantity of chlorine at the 3-ft. 6-in. drains placed 48 feet apart. In the years when rather heavier irrigations were given the 3-ft. 6-in. drains delivered more water and salt than the 6-ft. drains; and this was particularly so when individual irrigations approached 6-acre inches. When lighter irrigations were given the deeper drains were the more effective.

TABLE II.—Showing the amounts of water, and of Chlorine removed per acre by tile drains laid at various depths and distances apart on the experimental citrus grove at Tresco, Victoria, for the five years 1926–31; and also the amounts of water and chlorine added per acre in irrigation water during the same period.

	Water removed in lb./acre.						Chlorine removed in lb./acre.						
	1926–27.	27–28.	28–29.	29–30.	30–31.	Yearly† Average.	26–27.	27–28.	28–29.	29–30.	30–31.	Total 26–31.	Yearly* Average. 28–31.
Tile drains laid 6 feet deep and 96 feet apart	767,500	367,900	527,500	315,000	312,200	380,600	452	216	267	155	184	1,274	202
Tile drains laid 3 feet 6 inches deep and 48 feet apart	1,218,000	203,500	343,500	320,600	242,500	277,525	627	100	159	191	205	1,282	185
Tile drains laid 2 feet 3 inches deep and 24 feet apart	Not yet laid	Not yet laid	355,600	210,000	210,000	210,000	..	..	214	137	118	569*	190
	Water added in lb./acre.						Chlorine added in irrigation lb./acre.						
Irrigation water ..	4,077,500 (18 ac./in.)	1,999,000 (8·83 ac./in.)	3,764,000 (16·63 ac./in.)	3,726,000 (16·45 ac./in.)	2,310,000 (10·2 ac./in.)	3,175,300	489	220	339	447	277	1,772	..
Rainfall September-August inclusive	7·51″	13·76″	9·10″	11·06″	19·40″	..	..	..	..	..	..	..	..

* For three years only, 1927–31. † This average, in the case of the drains, is for all years (after laying the tiles) except the first, during which year the flow is exceptional.

For the three years during which the shallow drains at 2 ft. 3 in. were functioning the results from each of the three systems were of the same order. The deepest drains

Plate 1.—Lowering the framework of a drainage observation box into position.

were slightly more effective than either of the shallower drainage systems. This is shown in the last column of Table II.

The type of irrigation adopted would influence these results in practice. In the experiments flood irrigation (1) has been employed. Under furrow irrigation the output of the shallower drains—especially those at 2 ft. 3 in.—probably would be reduced, particularly if the furrows were kept close to the trees.

The quantity of chlorine removed in five years by either the 6-ft. deep system or the 3 ft. 6 in. system is sufficient to lower the average concentration of chlorine in the top 6 feet of soil by four parts per 100,000.

These reductions cannot be considered satisfactory for five years effort. *The salt leaching effect of all types of tile drains has been very disappointing.*

Nor is the position as satisfactory even as this for the irrigation water, though probably as good as can be economically secured in such saline country, is itself saline having a concentration of approximately 12 parts per 100,000 of chlorine. Table II. shows that the chlorine added in the irrigation water exceeded that removed by the drains by about 500 lb. per acre in the five years. This would be sufficient to raise the average concentration of chlorine on the top 6 feet of soil by 1.6 parts per 100,000.

Happily, the drains appear to be quite unnecessary from the salt leaching point of view. From the above remarks it might appear that the grove now should be more saline than in 1926. Such, however, is not the case. On the contrary, a very marked reduction of chlorine in the root zone has been brought about by the flood irrigation adopted, and the average concentration of chlorine even on the undrained sections, at the present time, in the root zone is not more than 10 parts per 100,000—a quite safe figure for citrus trees. This has been brought about by leaching the salt down into the lower layers of soil rather than out through the drains. It is not desired to discuss further this aspect of flood irrigation, as it has been more fully dealt with in previous papers (1), (2); but it might be stated that with reasonable care there appears to be no marked tendency for this chlorine to rise again to the surface. It is quite practicable to control chlorine in this way, and the condition of the block at Tresco continues to improve from year to year.

Plate 2.—Filling in a deep drain after laying the pipes.

Effect of Drains on Water Table.

The distribution of the water table at Tresco and the factors responsible for it have been dealt with at some length in earlier papers. Briefly, it was found that on about two-thirds of the grove, prior to the establishment of experiments a water table existed

within 3 feet to 4 feet of the surface, and that it practically coincided with the sick trees.

Deep bores disclosed that this water table was a temporary one held near the surface by an impervious subsoil of red clay; and that beneath it the soil was drier down to a depth of 15 to 20 feet, where the real water table of the surrounding country appeared to occur. The water table in the root zone was harmful for two main reasons—

1. It directly injured the trees' roots.
2. When close to the surface it encouraged the concentration of salt in the surface layers of soil.

Now, the obvious way to control a water table in most irrigated soils is to adjust the water applied to the needs of the plants growing thereon, so that any free water is soon withdrawn from the soil by the plants' roots, and transpired through the leaves.

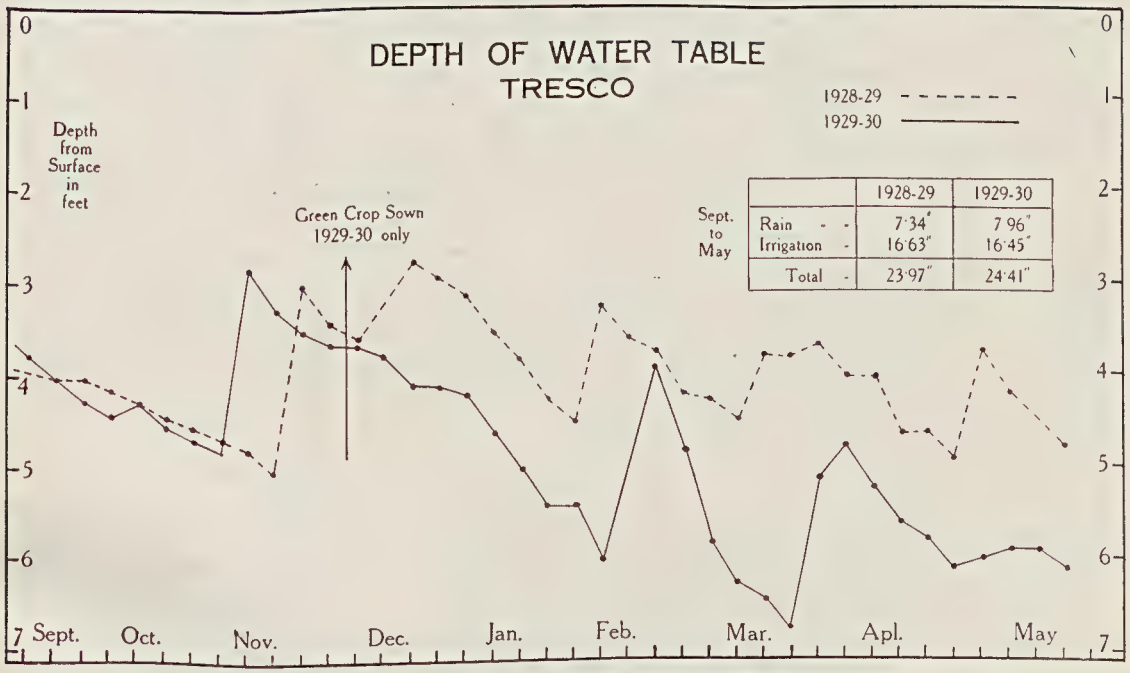
In the reclamation of affected groves on saline soils by leaching, however, more water than the plants' requirements must, of necessity, be given; and, further, when the trees are in poor health their water requirements are much below normal.

The effect of the drains upon the water table has been observed by measuring the depth to the free water from the soil surface in a large number of permanent bores placed at close intervals through the grove. These bores were measured at intervals not exceeding a week. The output of water of each drain has been recorded as described above.

Table II. shows the quantities of water removed per acre by drains of the different types. The results for the first year after the construction of the drains cannot be considered as typical, being influenced by the looseness of the soil replaced. In this period a much greater volume of water passes through the drains than is removed in subsequent years. The yearly average, therefore, has been compiled from the results of the four years, 1927-28 to 1930-31, in the case of the 6-ft. and 3-ft. 6-in. deep drains, and for two years, 1929-30 and 1930-31, in the case of the drains at 2 feet 3 inches.

It will be seen that a drainage system 6 feet deep and with 96 feet between the drains removed 1.37 times as much water per acre as did a system 3 feet 6 inches deep and 48 feet between drains; and 1.81 times as much per acres as 2-ft. 3-in. drains 24 feet apart. Thus the deeper the drains, the more effective they are in removing soil water under the conditions obtaining at Tresco.

Heavier irrigations tend to favour the 3-ft. 6-in. drains; with the lighter irrigations the drains at a depth of 6 feet are relatively even more effective than is stated above.



Graph 1.—Showing the varying depths of the water table throughout the year.

The drains, however, have altogether failed to control the water table. Even the most effective of the systems has proved quite inadequate.

Graph 1 shows for 1928-29 (season 1929-30 will be considered later) the depth of the water table from the surface throughout the irrigation season in a bore which is placed 12 feet from a 6-ft. drain on one side and 12 feet from a 3-ft. 6-in. drain on the other side. Such a concentration of tile drains on a citrus grove would be prohibitive; and yet a water table persisted throughout the season several feet above the level of a 6-ft. drain only 12 feet away.

Graph 2 illustrates the output of typical 6-ft. and 3-ft. 6-in. drains, each 170 feet in length and the position of the free water table for the twelve days period from 4th March to 16th March, 1927, following an irrigation of 4 acre-inches. The flows are given hourly for the first day (they were measured every half hour for sampling purposes throughout the whole period), and thereafter daily.

It will be seen that the output during the first day is very high, particularly for the 3-ft. 6-in drains. During this period water applied to soil immediately above and near to the drains is readily finding its way into them. Further, the free water in the top layers of sandy soil moves fairly readily to the drains. When the free water table falls to the subsoil the flow to the drains decreases markedly.

In twelve days from irrigation the 3-ft. 6-in. drains had ceased to run while the 6-ft. drain was delivering 0.5 lb. of water per minute—a rate of flow which is maintained for several weeks. This outflow is very small when one considers that, at the time, free water in the soil stood approximately 30 inches above the level of the 6-ft. deep drain.

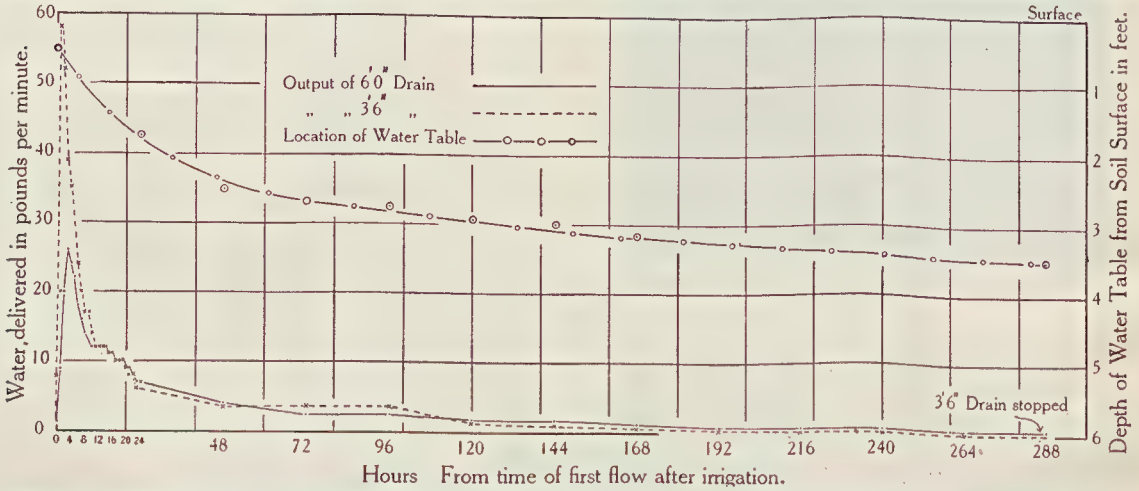
The reason for this, as has been pointed out in the other reports (1), (2) is that the subsoil in such regions as Tresco is of a very retentive red sodium clay, which to the eye appears friable, but which, owing to its chemical composition, is practically impermeable to water. A 9-in. pot filled with such soil will retain on its surface an inch of water practically unchanged for many weeks—only an occasional drip coming from the hole at the base of the pot.

This is the really difficult problem in our alkaline soils. Heavy dressings of gypsum, or lighter dressings of the much more expensive agent sulphur, appear to be the only amelioratives available, and their action will be found comparatively slow.

Transpiration from Cover Crops.

It has been said that the soundest way to control a water table on non-saline soils is to adjust the water applied to the needs of the crop. It has been possible at Tresco to apply the converse principle, and, in a measure, adjust the plant growth to the soil water conditions previously described.

Bore readings disclosed that only when the winter green crop of peas and beans commenced to grow did the water table begin to fall steadily in bores which, under clean cultivation, had remained almost unchanged for many weeks. In the winter months it was usual for the water table to fall below 6 feet



Graph 2.—Showing the rate of flow of water from Tresco drains and the location of the water table for the period 4th to 16th March, 1927, following a 4 acre-inches irrigation.

comparatively rapidly, as the soil moisture was withdrawn by the vigorous green crop.

The effect of a summer crop—Sudan grass was chosen—sown in strips 12 feet wide between the tree rows was, therefore, determined, and in 1929, after successful small trials, it was made a routine practice on the grove. In Graph 1 the curve for 1929-30 shows that in the same bore as was observed in 1928-29 the effect of the summer crop is clearly seen. The two seasons were comparable both in irrigation water applied and in the rain which fell. Further, the similarity of the curves for both years up till the time of sowing the Sudan grass is noticeable. Thereafter the water table is seen to be consistently much lower, and for the first time in the course of the experiments the water table was reduced to below 6 feet from the surface between summer irrigations.

Not only did this summer crop markedly lower the water table during the course of reclamation; but by this lowering it rendered the downward leaching of chlorine very much more efficient. This was evident in the periodical soil analyses which preceded and followed each irrigation. It has been stated already that chlorine is now reduced to a level which eliminates it as an important factor in tree health on the grove.

The growth of a summer crop suited to the district is recommended on groves or portions of groves whereon a water table occurs which can not be adequately controlled by adjustments in irrigation practice.

Conclusion.

We thus see that tile drains at Tresco have really failed to justify the expense of their installation; and their use cannot be recommended on soils of this type as the result of the work carried out.

On the other hand methods of irrigation and orchard management, capable of meeting the situations we have discussed, can be applied at very little extra expense to the grower.

Summary.

1. The results of observations of the outflow of water and its chlorine content from each of the various systems of tile drainage tested from 1926-1931 on the experimental citrus grove at Tresco are reported herein.

2. The three systems installed are—

(*a*) drains 6 feet deep and 96 feet apart.

(*b*) drains 3 ft. 6 in. deep and 48 feet apart.

(*c*) drains 2 ft. 3 in. deep and 24 feet apart.

3. The chlorine removed per acre by each system is approximately the same (Table II.). The deepest drains are only slightly more effective than the shallower systems.

4. None of the systems, however, is satisfactory from the salt leaching point of view. After allowing for the chlorine added to the soil in the irrigation water, the net removal of chlorine is sufficient to reduce the concentration of that ion in the top 6 feet of soil by only 2.5 parts per 100,000 in five years.

5. Flood irrigation, nevertheless, during this period has reduced the chlorine concentration of the soil to a level quite safe for citrus trees. As it has done this on undrained sections of the grove tile drains for salt leaching appear unnecessary.

6. Table II. shows that the 6-ft. deep drainage system removed per acre 1.37 times as much water as that at 3 feet 6 inches, and 1.81 times as much as that removed per acre by the 2-ft. 3-in. system.

7. Even the most effective tile drainage system, however, has proved inadequate to satisfactorily lower the water table during the irrigation season. (Graph 1, curve 1928-29.) This is because of the very retentive nature of the subsoil in which sodium is the controlling replaceable base (2). The amelioration of this condition is one of the most difficult problems on such soils.

8. Sudan grass sown in strips 12 feet wide between the rows of trees has reduced the level of the water table considerably throughout the irrigation season (Graph 1); and the use of such a crop on waterlogged soils of this category is recommended.

9. Tile drains at Tresco have failed to justify their installation, and are not recommended on such soils. The methods of irrigation and orchard management which have been more fully discussed in previous papers (1), (2) are considered on the other hand to give the grower a satisfactory measure of control.

References.

1. Read, Frank M.—Soil Alkali Investigations at Tresco. J. of D. of Ag., Victoria. Vol. 28, Part 2. February, 1930.

2. Read, Frank M.—An Investigation of the Non-Thrifty Condition of Citrus Trees at Tresco. J. of D. of Ag., Victoria. Vol. 29, Part 11. November, 1931.

Standard Herd Records

For Quarter ended 31st December, 1932

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 391, of which 255 qualified for the certificate. The figure in brackets after the owner's name shows the number of entries that qualified for the certificate.

The amount of butter fat required for qualification varies according to the age of the animal (up to 5 years at time of calving), the standards being as follow :—

Junior 2 year old (under 2½ years at time of calving)	230 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving) ..	250 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving) ..	270 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving) ..	290 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving) ..	310 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving) ..	330 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

(Except where otherwise stated, the period of Test was 273 days.)

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Allwood, A., Stanhope, Friesian (1).											
Tarrangower Helen Oak..	App. 3 Vol. 12	6.2.32	20½	11,124	3.31	368·06	230	Jr. 2	..	.. ..	Greenvale Ebony Oak
Alston, N. B., Romsey, Jersey (4).											
Rosyth Lady Tulip 5th ..	Vol. 19	2.3.32	21	5,180	5·01	259·71	230	Jr. 2	..	.. ..	Aveley Antony
Rosyth Jessie's Dream ..	Vol. 19	7.3.32	17	5,151	5·08	261·64	230	Jr. 2	..	.. ..	Lord 2nd of Brucevale
Rosyth Meadow Sweet ..	26379	15.3.32	25½	7,464	5·17	386·05	330	Sr. 4	..	231, 261, 318	Lord 2nd of Brucevale
Rosyth Lady Jessie ..	26377	22.3.32	17	6,684	5·25	351·07	350	Mature	..	276, 328, 335	Lord 2nd of Bruce Vale
Anderson, J., jun., Lyndhurst, Jersey (5).											
King's Vale Brunette 25th	28373	16.1.32	14½	5,325	5·14	273·77	270	Jr. 3	..	195 ..	Linda 55th V.C. of King's Vale
King's Vale Linda 75th ..	25717	20.1.32	16½	3,335	5·40	341·99	310	Jr. 4	..	279, 318	Linda 55th V.C. of King's Vale
Rosella 11th of King's Vale	16591	10.2.32	19	6,362	6·31	401·20	350	Mature	..	455, 372, 336, 332, 318	Royal Rose's V.C. of King's Vale
King's Vale Rosella 16th	28378	11.2.32	22	5,985	5·15	308·10	270	Jr. 3	..	.. ..	Linda 55th V.C. of King's Vale
King's Vale Linda 77th ..	28377	11.2.32	15½	4,845	6·28	304·08	270	Jr. 3	..	.. ..	Linda 55th V.C. of King's Vale
King's Vale Lady Monica 24th	25716	10.3.32	9½	5,718	5·13	293·50	310	Jr. 4	..	256, 292 ..	Linda 52nd Imperial 2nd
Atherton, W. H., Murraydale, Jersey (1).											
Beverley Empress 3rd ..	32897	4.2.32	16½	5,163	5·07	308·35	230	Jr. 2	..	.. ..	Banyule Remon
Atkinson, W. P., Swan Hill, Milking Shorthorn (3).											
Willow Park Ruby 5th ..	..	27.2.32	11	5,364	4·54	243·59	250	Sr. 2	..	.. ..	Bondsman of Willow Park
Willow Park Fairy ..	13599	6.3.32	50	16,244	4·38	711·75	350	Mature	..	380, 528, 570, 646, 732, 712, 745	Stratagem of Willow Park
Willow Park Dainty 2nd	Vol. 1 D,S,H,B,	18.3.32	25	8,390	3·80	318·98	350	Mature	..	258, 342, 344, 344	Count of Willow Park
Willow Park Damsel ..	13408	18.3.32	27	9,849	4·48	441·18	350	Mature	..	338, 409, 452, 380, 439, 538, 490, 458	Havelock of Darbalara
Willow Park Butterfly ..	13201	28.3.32	24	8,394	4·28	359·32	350	Mature	..	301, 356, 406, 393	Colonel of Willow Park
Axford, W. H., Camperdown, Jersey (1).											
Leura May 3rd ..	25241	23.2.32	22	8,060	5·06	407·65	310	Jr. 4	..	334 ..	Monitor of Leura
Ballarat Orphanage, Ballarat, Jersey (2).											
Orphanage Allan's Pearl ..	32927	18.1.32	16	6,801	5·50	374·06	270	Jr. 3	..	241 ..	Audrey's Allan of Tavistock
Garden Vale Venture ..	22965	16.3.32	22	6,923	5·28	365·38	350	Mature	..	359, 237 ..	Audrey's Prince of Banyule
Bassett Smith, C., Kyabram, Red Poll (0).											
Woodburn Cheerup ..	2767AA	5.2.32	17	4,322	4·30	185·94	250	S.2	..	.. ..	Whiteway Wiseman Imp.
Woodburn Pippin ..	1118AA	7.3.32	19½	6,620	3·92	259·51	350	Mature	..	.. ..	Eastern Liberator

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Belfield, G. H., Coleraine, Jersey (2).											
Wootong Vale Golden Charm	Vol. 19	30.1.32	16	6,378	4·93	314·55	230	Jr. 2	..	.. ..	Wootong Vale Gold Duke
Queen's Lass of Clover Flat	13031	16.2.32	17	7,464	5·10	380·32	350	Mature	..	.. ..	Bonnie Lad of Kingsvale
Bidgood, F., Wodonga, Jersey (2).											
Staghorn's Master's Belle	25762	17.1.32	34	9,795	6·24	610·81	310	Jr. 4	..	425, 504 ..	Werribee Masterpiece Northern
Staghorn's Master's Clementine	22980	15.2.32	23½	8,099	6·47	524·21	350	Mature	..	388, 415, 409	Werribee Masterpiece Northern
Black, Mrs. A. J., Noorat, Jersey (1).											
Noorat Music	32993	24.3.32	14	6,555	5·82	381·40	270	Jr. 3	..	315 ..	Cellist of Warenda
Black, I. S., Noorat, Ayrshire (1).											
Peggy of Ben Kell ..	11349	8.3.32	20	7,255	4·60	333·70	350	Mature	..	297, 364, 283, 481, 396 347	Ruff of Oakbank
Mt. Noorat Scottish Lassie	20553	29.3.32	13	8,054	4·11	330·98	270	Jr. 3	..	286 ..	Scottish Fame of Gowrie Park
Bolton, S., Mannerim, Jersey (1).											
Trixie of Enterprize ..	21147	22.3.32	21½	10,320	5·26	542·68	350	Mature	..	274, 370, 459, 469	Royal Gem of Somerville
Box, Dr. J., Noojee, Jersey (0).											
*Tooranga Princess Eleanore	28481	10.3.32	4	1,590	6·51	103·50	270	Jr. 3	..	237 ..	Sunset of Melrose
Box, Dr. J., Surrey Hills (2).											
Melview Frond ..	Vol. 19	1.1.32	N.O.C.	4,761	5·76	274·04	230	Jr. 2	..	.. ..	Handsome Boy 12th of Jerseyholme
Bellfaire Bijou Belle ..	26739	30.1.32	N.O.C.	6,312	5·26	347·58	290	Sr. 3	..	.. ..	Sherborne Wyandotte's Distinction
Cameron and Sons, Valencia Creek, Jersey (3).											
†Eminent's Minnehaha 7th of Clarendon Eyre	21268	1.1.32	4	6,180	4·88	301·30	350	Mature	..	302, 321, 422	Eminent V.C.
Studleigh Harbell 5th ..	Vol. 19	12.1.32	22	6,729	6·27	421·87	250	Sr. 2	..	.. ..	Studleigh Masterpiece
Studleigh Duchess 10 ..	Vol. 19	25.1.32	15½	4,689	6·23	292·16	230	Jr. 2	..	.. ..	Studleigh Masterpiece
Studleigh Fancy Starbright	Vol. 19	9.2.32	13½	5,088	5 63	286·62	250	Sr. 2	..	.. ..	Studleigh Masterpiece
Chadderton, J. E., Hamilton, Jersey (2).											
Glen Leigh Duchess 5th ..	25792	17.3.32	18	7,637	6·39	487·92	310	Jr. 4	..	338, 421 ..	Gadabout of Danton
Duchess of Glen Leigh ..	15462	18.3.32	25½	8,781	6·90	303 23	350	Mature	..	410, 346, 489, 426, 478	Master Moll of Banyule
Charlton, Jas., Stony Creek, Jersey (1).											
Lumeah Lulu	24290	11.2.32	20	6,327	5·63	356·52	350	Mature	..	297, 250, 387	Kyora Anthem's Duke
Chester, E. N., Mt. Scobie, Jersey (1).											
Radford Lady Golden ..	33117	28.3.32	19	4,626	5·95	275·46	230	Jr. 2	..	.. ..	Ballara Golden Lad
Chirnside, R. M., Whittlesea, Jersey (4).											
Melrose Clementine ..	28551	3.1.32	14½	8,956	5·52	495·28	250	Sr. 2	..	329 ..	Masterpiece (Imp.)
Werribee Princess Satisfaction	28543	17.2.32	23½	10,200	5·83	594·75	290	Sr. 3	..	.. ..	Werribee Butter King
Mornmoot Modiste 2nd ..	33140	18.3.32	19	5,289	6·80	359·83	230	Jr. 2	..	.. ..	Werribee Prince Madeira
Bruce Vale Fancy Starbright 2nd	25802	25.3.32	27	9,497	6·42	609·36	350	Mature	..	338, 309, 484	Masterpiece of Bruce Vale
Clark, P. W., Whittlesea, Jersey (0).											
Clovelly Sweet Briar ..	33166	7.3.32	15	5,774	5·70	329·07	350	Mature	..	349 ..	Gay Gordon of Clovelly
Clyne, J., Upper Maffra West, Jersey (11).											
Beauty 4th of St. Albans	15440	29.12.31	N.O.C.	9,630	5·86	564·23	350	Mature	..	485, 598, 548, 592	King 3rd of St. Albans
Flossie of Swansea ..	21189	15.1.32	19	6,446	6·17	397·62	350	Mature	..	200, 312, 362, 314	Bonnie Boy of Swansea
Paisley Dolichos ..	Vol. 19	20.1.32	19	6,029	5·70	343·84	230	Jr. 2	..	.. ..	Werribee Master Key
Playhour of Swansea ..	21196	25.1.32	4	5,040	5·92	298·55	350	Mature	..	323, 390 ..	Prince of Belgonia
Paisley Prim	Vol. 19	29.1.32	19½	6,030	5·49	331·07	250	Sr. 2	..	.. ..	Prince of Swansea
Paisley Coralie ..	33175	30.1.32	20½	7,436	5·58	415·12	270	Jr. 3	..	319 .	Werribee Masterkey
Paisley Shirley ..	Vol. 19	15.2.32	17	5,558	5·56	309·19	250	Sr. 2	..	.. ..	Werribee Masterkey
Paisley Princess ..	Vol. 19	2.3.32	16	6,297	4·86	305·76	250	Sr. 2	..	.. ..	Prince of Swansea
Jersey Vale Jonquil ..	24540	10.3.32	16½	6,513	5·41	352·25	350	Mature	..	270, 303 ..	Princess 2nd's Twylish of Grangelea
Mistletoe of Swansea ..	21193	15.3.32	20½	9,089	5·12	464·92	350	Mature	..	341, 466, 499, 462	Prince of Belgonia
Paisley Poppy 2nd ..	Vol. 19	16.3.32	16	5,238	5·21	272·85	230	Jr. 2	..	.. ..	Werribee Master Key
Paisley Rose Petal ..	Vol. 19	28.3.32	20	6,843	6·21	424·72	270	Jr. 3	..	310 ..	Werribee Master Key

* 120 days in Test. † 240 days in Test.

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Cockbill Bros., Bacchus Marsh, Ayrshire (3).											
Fulham Topic	20029	19.1.32	19	6,798	4·01	272·92	270	Jr. 3	..	309 ..	The Laird of Sparrovale
Shamrock of Warrook ..	11084	2.2.32	14½	7,703	3·57	274·87	350	Mature	..	371, 280 ..	Weelfair'd of Oakbank
Fulham Model	14645	20.2.32	18½	7,259	4·67	338·88	350	Mature	..	273, 348, 323, 355	The Laird of Sparrovale
Fulham Vivian ..	20031	6.3.32	14½	4,736	4·86	230·39	290	Sr. 3	..	230 ..	The Laird of Sparrovale
Fulham Toddler ..	13338	14.3.32	27	10,782	4·32	466·13	350	Mature	..	301, 184, 367, 394, 471	His Majesty of Wethersdane
Fulham Vanity ..	10920	15.3.32	24	10,331	4·69	484·45	350	Mature	..	315, 426, 362, 315, 370	Laird of Sparrovale
Cockbill Bros., Rockbank, Ayrshire (0).											
Fulham Carrie	17933	7.1.32	12	4,623	4·76	220·08	310	Jr. 4	..	187, 75 ..	Fulham Future
Fulham Vogue	22754	19.1.32	11	5,046	4·61	232·87	270	Jr. 3	..	231 ..	Fulham Future
Cockbill Bros., Tongala, Ayrshire (0).											
Fulham Beatrice ..	17932	20.1.32	10	6,272	4·08	256·19	310	Jr. 4	..	214 ..	The Laird of Sparrovale
Fulham Lyric	20024	16.2.32	11	6,008	4·25	255·49	270	Jr. 3	..	193 ..	The Laird of Sparrovale
Colenso, L. W. R., Alvie, Jersey (2).											
Normandie Thelma ..	24304	5.3.32	18½	6,834	5·39	368·44	350	Mature	..	275, 356, 332	Thelma's King of St. Albans
Nancy 4th of Somerset ..	17401	25.3.32	19	8,162	5·42	442·00	350	Mature	..	304 ..	Sergeant B of Somerset
Cook, D. E., Loch, Jersey (1).											
Wattle Vale Flirt ..	33198	18.3.32	16½	4,593	6·24	286·52	250	Sr. 2	..	230 ..	Retford Deer's Noble
Coughlin, C., Yannathan, Jersey (2).											
Aveley Valda's Petal ..	26314	8.1.32	27	6,986	5·40	377·08	330	Sr. 4	..	188, 258, 254	Economist of Aveley
Aveley Leila	25232	22.1.32	25	6,597	5·87	387·03	350	Mature	..	324, 393 ..	Werribee Fancy Butter King
Cox, A., Mt. Scobie, Jersey (5).											
Tavistock Patty ..	25819	2.1.32	20½	7,503	5·70	428·01	330	Sr. 4	..	299, 322 ..	Audrey's Prince of Banyule
Belgonia Stumpy 3rd ..	29119	2.1.32	15	6,438	5·56	358·26	310	Jr. 4	..	294, 317 ..	Aerial of Banyule
Tavistock Milkmaid 2nd ..	28616	19.1.32	22	6,759	5·45	368·38	290	Sr. 3	..	203, 315 ..	Duke of Pendennis
Audrey's Pearl of Tavistock	18673	28.1.32	24	7,091	5·20	410·52	350	Mature	..	463, 424 ..	Audrey's Prince of Banyule
*Tavistock Clarionette 2nd	33218	4.2.31	15	4,372	6·05	264·50	250	Sr. 2	..	.. ..	Audrey's Prince of Banyule
Davies, J. W., Coalville, Jersey (1).											
Clyde Vale Morning Star	Vol. 19	1.1.32	9½	3,313	5·69	188·35	230	Jr. 2	..	.. ..	Staghorn's Master's Defiance
Clyde Vale Petals Beauty	33268	4.2.32	15	4,194	5·50	230·75	230	Jr. 2	..	.. ..	Staghorn's Master's Defiance
Day, E., Penshurst, Jersey (1).											
Viewpoint Sunlight ..	28343	23.2.32	26	7,020	5·48	384·35	270	Jr. 3	..	242 ..	Bracondale First Choice
Viewpoint Princess ..	28642	20.3.32	10½	3,830	6·00	229·98	270	Jr. 3	..	130 ..	Viewpoint Noble
De La Rue, N. C., Weering, Jersey (1).											
Lucerne Vale Battle's Trixie 4th	Vol. 19	7.3.32	12	4,637	6·12	283·70	230	Jr. 2	..	.. ..	Somerville Battle
Department of Agriculture, Burnley Horticultural Gardens, Jersey (1).											
Victoria Venus ..	33237	3.1.32	14½	4,479	6·43	288·12	230	Jr. 2	..	.. ..	Victoria Jack Tar
Department of Agriculture, Werribee, Friesian (2).											
Victoria Lean Patch ..	1705	14.1.32	31	15,113	3·38	511·09	350	Mature	..	326, 303, 577, 506, 700, 592	Victoria Jo Patch
Victoria Tinkle Belle ..	3266	19.2.32	21	11,861	3·52	417·40	310	Jr. 4	..	261 ..	Dominion Oakdale
Department of Agriculture, Werribee, Red Poll (8).											
Victoria Coquette ..	3015A	2.1.32	25½	7,584	4·04	306·05	230	Jr. 2	..	.. ..	Victoria Vice Regal
Victoria Avro	3009A	5.1.32	11½	4,917	4·59	225·56	230	Jr. 2	..	.. ..	Victoria Vice Regal
Victoria Velbit ..	2341A	9.1.32	17½	7,133	4·24	302·59	330	Sr. 4	..	328, 328 ..	Victoria Bit-o-Bacca
Victoria Ghazal ..	2320A	20.1.32	27½	8,523	4·14	353·18	270	Jr. 3	..	253 ..	Vice Regal
Victoria Algiers ..	3004A	25.1.32	20	5,835	4·25	247·91	230	Jr. 2	..	.. ..	Victoria Royal Ringer
Victoria Peace	2327A	25.1.32	18	6,845	4·75	325·21	310	Jr. 4	..	309, 335 ..	Victoria Bit-o-Bacca
Victoria Amara ..	1649A	27.1.32	27	9,612	4·71	452·28	350	Mature	..	321, 415, 445, 464	Belligerant
Victoria Sargasso ..	3037A	12.2.32	7	6,912	4·07	281·03	230	Jr. 2	..	.. ..	Victoria Vice Regal
Victoria Eagle ..	2315A	27.2.32	14½	6,693	5·08	340·13	310	Jr. 4	..	298 ..	Vice Regal
Victoria Court Belle ..	2089	4.3.32	16	6,065	4·68	283·66	270	Jr. 3	..	169 ..	Victoria Vice Regal
Dickinson Bros., Sebastopol, Friesian (1).											
Ashby Phyllis 5th ..	1171	3.1.32	37½	10,740	3·25	349·51	350	Mature	..	308, 312, 370, 352, 358	Bolobek General
Ashby Princess Pauline ..	2091	6.1.32	32	9,221	3·96	365·32	350	Mature	..	345 ..	Ashby General Paul
Ashby Patricia Pauline ..	1168	6.2.32	22½	9,060	3·54	320·92	350	Mature	..	344, 374, 389, 414	St. Alban's May Queen Netherland Prince

* 240 days in Test.

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Dookie Agricultural College, Dookie, Ayrshire (5).											
Dookie Lily	23669	27.2.32	19	6,656	4·58	304·81	230	Jr. 2	..	..	Dookie Pater
Dookie Flo	23667	5.3.32	21	7,554	4·94	373·43	230	Jr. 2	..	..	Longerenong Laurie
Dookie Floss	23668	7.3 32	26½	8,921	4·55	405·92	230	Jr. 2	..	..	Longerenong Laurie
Dookie Patience	23670	12.3.32	29	8,352	4·55	380·25	250	Sr. 2	..	..	Majestic of Burwood
Dookie Dora	23666	21.3.32	27	7,694	4·36	335·84	230	Jr. 2	..	..	Longerenong Lorrie
Dowel, L. G., Jumbunna, Jersey (2).											
Callemondah Sunshine	33292	14.3.32	24	6,782	5·83	395·86	270	Jr. 3	..	309	Dawn of Warenda
Alalawa Duchess	33291	23.3.32	24	7,464	5·81	433·49	270	Jr. 3	..	316	Alliance 3rd of Jerseyholm
Dowie, A. F., Carlsbrook, Jersey (2).											
Balcairn Master's Madeira	Vol. 19	27.2.32	16	6,441	5·33	334·58	230	Jr. 2	..	..	Balcairn Master Musician
Balcairn Master's Joybell	Vol. 19	23.3.32	15½	5,658	5·57	315·41	230	Jr. 2	..	..	Balcairn Master Musician
Downie Bros., Longwarry South, Ayrshire (6).											
Glen View Topsy	21618	4.1.32	10	7,388	3·84	283·96	350	Mature	..	..	Gold Coin of Fairfield Park
*Glen View Odette	21616	8.1.32	4	3,840	4·28	164·19	350	Mature	..	..	Gold Coin of Fairfield Park
*Glen View Topsy 3rd	C.R.	26.1.32	4	2,880	4·17	120·18	230	Jr. 2	..	..	Gowrie Park Dairy Boy
Glen View Marie 2nd	21612	23.3.32	8	4,619	4·66	215·19	290	Sr. 3	..	..	Gowrie Park Dairy Boy
Ducat, P. J., Ardmona, Jersey (6).											
Airlie Beauty 2nd	25846	12.1.32	10½	4,982	5·02	250·26	350	Mature	..	133, 257, 313	Sunrise of Airlie
Airlie Buttercup 6th	33310	12.3.32	13½	4,992	5·06	252·38	270	Jr. 3	..	215 ..	Airlie Prince
†Airlie Pansy 2nd	28675	12.3.32	4	5,010	5·54	277·53	310	Jr. 4	..	309, 400 ..	Hedge of Banyule
Edwards, T. J., Sale, Jersey (1).											
Chandos Island Princess	Vol. 19	11.3.32	19	5,835	6·07	353·95	230	Jr. 2	..	.. ..	Fairbank Peter
Emmett, W. H., Stanhope, Jersey (1).											
Pearl's 2nd Goldie of Cool-woola	21734	1.2.32	15	7,199	6·01	432·77	350	Mature	..	302 ..	Mercedes Golden Prince of Glen Iris
Enders, A. E., Stanhope, Friesian (2).											
Burnbank Bainfield Patch	1514	2.1.32	30½	12,938	3·69	477·79	350	Mature	..	390, 607, 608, 600	Rock Patch
Burnbank Majoe Maggie	3395	5.1.32	10	9,203	3·53	324·77	270	Jr. 3	..	350 ..	Dominion Joe Segis Matador
Enders, N. H., Stanhope, Jersey (4).											
The Wattles Valencia	33992	12.1.32	26½	6,513	5·87	382·17	250	Sr. 2	..	.. ..	Choice Prince of Belgonia
Buttercup of the Wattles	12910	27.1.32	23	9,695	5·72	554·66	350	Mature	..	430, 528, 551, 469	Duke of Bonshaw
The Wattles Pearl	23125	25.2.32	29½	9,290	5·89	547·51	350	Mature	..	338, 459 ..	Choice Prince of Belgonia
The Wattles Orange Petal	33988	21.3.32	21¼	6,711	5·16	346·38	250	Sr. 2	..	.. ..	Prince of Wales of Hillcrest
Evans, A., Heywood, Jersey (2).											
Boronia Farm Linnet	33329	2.1.32	10½	4.064	6·15	249·84	230	Jr. 2	..	.. ..	Prince of Boronia Farm
Velveteen 11th of Banyule	21438	24.1.32	26	8,666	4·91	425·17	350	Mature	..	426, 316 ..	Wotton Airman
Boronia Farm May	23129	20.2.32	18	6,029	5·43	327·49	330	Sr. 4	..	236, 181, 300	Frost of Castlemaddie
Fairchild and Clutterbuck, Tinamba, Jersey (3).											
Somerville Empress 2nd	34111	23.1.32	18	6,011	5·30	318·42	230	Jr. 2	..	.. ..	Somerville Reputation
Vaucluse Blossom	33334	24.1.32	13	5,004	6·18	309·34	250	Sr. 2	..	244 ..	Jerseyholm Handsome Boy 9th
Vaucluse Kirsty	33335	16.2.32	17½	5,063	7·04	356·54	250	Sr. 2	..	211 ..	Jerseyholm Handsome Boy 9th
Findlay, G., Leitchville, Jersey (1).											
Leven Brae Lal Grey	23135	18.2.32	11½	7,041	5·29	372·14	350	Mature	..	307, 320, 352, 433	Twylish Fox of Colac
Fisken, A., Yendon, Dairy Shorthorn (0).											
Poplar Vale Princess 194th	Vol. 1	19.2.32	11	6,603	4·00	264·31	350	Mature	..	200, 262 ..	Poplar Vale Prince 130th
Fixter, A., Boisdale, Guernsey (3).											
Mincha Vale Daphne	2632	31.12.31	20	6,510	5·51	365·35	350	Mature	..	346, 371, 379	Golden Chief of Melbourne
Fernlea Daphne	2680	31.1.32	19	6,435	6·19	398·52	310	Jr. 4	..	293, 339 ..	Werribee Jessie Boy
Fernlea Eve	2539	28.2.32	11	5,543	5·54	306·99	270	Jr. 3	..	276 ..	Yarraview Albert
Fixter, W., Boisdale, Jersey (1).											
Queenie of Riversdale	12922	3.1.32	12	6,170	4·84	298·54	350	Mature	..	290, 246, 295, 325, 367, 379	Tiny Tim of Kilburn
Studleigh Duchess 4th	25290	8.1.32	9½	5,022	5·14	258·29	330	Sr. 4	..	274, 201, 315	Werribee Madeira Starbright King
Studleigh Duchess 6th	28698	8.3.32	7	4,982	5·84	290·88	290	Sr. 3	..	265, 294 ..	Werribee Madeira Starbright King

* 210 days in Test. † 240 days in Test.

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Foster Bros., Boisdale, Jersey (7).											
Brunette 22nd of King's Vale	21084	30.12.31	20	7,406	5·29	391·72	350	Mature	..	309, 407, 422, 356	Ruby's Lad of King's Vale
Boisdale Netta ..	Vol. 19	6.1.32	15	4,977	6·02	299·67	230	Jr. 2	..	.. ..	Boisdale Fox
Malwand Fuchsia ..	33349	10.1.32	12	5,825	5·43	316·43	270	Jr. 3	..	257 ..	Duke of Belgonia
Ballara Madeira ..	23145	14.2.32	9	6,648	5·61	372·63	350	Mature	..	302, 309, 359	Werribee Madeira Cream's Masterpiece
Boisdale Countess 2nd ..	Vol. 19	28.2.32	15½	4,748	5·29	251·04	230	Jr. 2	..	.. ..	Boisdale Emperor
Jerseyholm Sparkle 11th..	23146	9.3.32	22½	7,265	3·44	467·56	350	Mature	..	398, 392, 450	Handsome Boy 7th of Jerseyholm
Boisdale Countess ..	33345	21.3.32	15	6,428	5·83	374·86	250	Sr. 2	..	214 ..	Starbright's Prince of Glen Iris
Freestone, P., Murchison, Jersey (2).											
Belgonia Romany Lass 3rd	29118	29.1.32	N.O.C.	8,076	5·71	460·99	310	Jr. 4	..	413 ..	Aerial of Banyule
Melba of Jersey Vale ..	21542	26.2.32	N.O.C.	7,025	6·01	422·06	350	Mature	..	170, 423 ..	Choice 2nd of Tarnpirr
Gange, Mrs. E. M., Werribee South (1).											
Roseleigh Bellona ..	23206	30.1.32	24	7,547	4·20	316·94	250	Sr. 2	..	.. ..	Roseleigh Royal
Roseleigh Ruth ..	18900	3.3.32	8½	5,299	4·21	223·27	310	Jr. 4	..	.. ..	Oakbank Reply
Gardener, J. L., Welshpool, Jersey (0).											
Lauriston Princess Royal	Vol. 19	7.3.32	18	5,100	4·74	241·98	250	Sr. 2	..	.. ..	Lauriston Twylish Nobility 5104
Gay, R. G., North Devon, Jersey (2).											
Elm Grove Jessie Fowler 2nd	Vol. 19	19.3.32	21	6,486	5·36	347·90	230	Jr. 2	..	.. ..	Gold Star of Melrose
Elm Grove Jessie Fowler	25900	29.3.32	23	8,876	5·36	475·31	290	Sr. 3	..	274, 391 ..	King William of Rochdale
Gibson Bros., Trafalgar, Jersey (1).											
Leathorne Buttercup 5th	33362	25.2.32	11	4,659	5·46	254·41	230	Jr. 2	..	.. ..	Leathorne Cream Chief
Leathorne Pearline ..	24369	1.3.32	14	5,249	5·95	312·22	350	Mature	..	323, 358 ..	Annette's Chief 2nd of Linden
Leathorne Minnehaha ..	24367	3.3.32	16	3,842	7·81	300·21	330	Sr. 4	..	273, 322 ..	Cream Chief of Leathorne
Gorman, A. W., Alexandra, Ayrshire (1).											
Catheart Merline ..	21141	12.3.32	25	8,088	4·37	353·74	230	Jr. 2	..	.. ..	Ben Kell Watford
Gregg, V., Whittlesea, Jersey (1).											
Stoneycroft Plum ..	Vol. 19	17.1.32	18½	4,554	6·22	283·13	230	Jr. 2	..	.. ..	Kantara Don Juan
Handbury, J. E., & Sons, Toora, Jersey (1).											
Tooravale Lassie 3rd ..	25905	10.3.32	25	7,686	6·35	487·38	310	Jr. 4	..	243, 331 ..	Welkin of Melrose
Handley, S. C., Dandenong, Jersey (1).											
Marimba Briar Rose 3rd	29567	29.2.32	24½	8,957	5·15	461·68	350	Mature	..	259, 417 ..	Marimba Lily's Chief 2nd
Harker, D. C., Tyers, Ayrshire (0).											
Thirlmere Countess ..	22141	30.12.31	12	4,046	5·03	203·35	230	Jr. 2	..	.. ..	Gerty's Producer of Carracoorte
Poppy of Thirlmere ..	12211	7.1.32	18	5,678	4·08	231·89	350	Mature	..	223, 296, 290, 302, 291	Arbitrator of Rithdale Park
Thirlmere Sparrow ..	C.R.	2.3.32	10	3,593	4·30	154·65	230	Jr. 3	..	.. ..	Scottish Lord of Gowrie Park
Harker, W. T., Caldermeade, Ayrshire (0)...											
Sparrovale Violet ..	18935	5.3.32	14	6,038	4·57	275·64	330	Sr. 4	..	233, 262 ..	Scottish Fame of Gowrie Park
Wayside Dimple ..	22211	7.3.32	16½	5,014	3·92	196·73	230	Jr. 2	..	.. ..	Great Scott of Gowrie Park
Harrison, Miss K., Frankston, Jersey (1).											
Walbundry Beta 2nd ..	Vol. 19	21.1.32	15½	4,485	5·18	232·50	230	Jr. 2	..	.. ..	Walbundry Rochdon
Harrison, F. T., and Sons, Moondarra, Jersey, (3).											
Mornmoot Meloa 2nd ..	33133	8.2.32	23	5,961	5·76	343·65	230	Jr. 2	..	.. ..	Choirmaster of Banyule
Mornmoot Maple ..	28533	26.2.32	21	5,195	6·37	331·13	270	Jr. 3	..	.. ..	Austral Valley Gay Spark
Mornmoot May ..	28556	27.3.32	20½	7,131	5·47	390·28	290	Sr. 3	..	.. ..	Burnside Banker
Harvey Trevor, Boisdale, Jersey (3).											
Pine Park Rosella ..	25440	4.1.32	24½	6,735	4·42	297·42	310	Jr. 4	..	.. ..	Prince of Fairbank
Pine Park Ruby ..	Vol. 19	22.1.32	11	4,160	5·51	229·36	310	Jr. 4	..	.. ..	Quality's Prince of Pine Park
Pine Park Lady Choice ..	25438	31.1.32	17	6,617	5·15	340·95	310	Jr. 4	..	.. ..	Prince of Fairbank
Pine Park Pansy ..	Vol. 19	1.2.32	22	6,627	5·20	344·79	270	Jr. 3	..	.. ..	Quality's Prince of Pine Park
Edmonton Vixen ..	23050	18.3.32	31	10,356	5·61	580·79	350	Mature	..	493, 502, 544	Big Chief of Glen Iris
Hayes, E. P., Loch, Jersey (2).											
Elmwood Queen Bee ..	Vol. 19	3.2.32	17½	5,139	5·43	279·27	230	Jr. 2	..	.. ..	Elmwood Beauty's Prince
Melrose Flower 19th ..	25693	29.2.32	26½	8,828	6·06	535·22	350	Mature	..	366 ..	Sunset of Melrose

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Haywood, Dr. A. R., Hastings, Jersey (1).											
Chevy 13th of Melrose ..	11775	21.2.32	30½	8,697	5·47	475·38	350	Mature ..		285, 396, 493, 419, 535, 529, 528	Golden Fern's Viscount
Lady Grey 26th of St. Albans	14162	28.2.32	13½	5,919	4·96	293·85	350	Mature ..		313, 384, 414, 475, 329	King 3rd of St. Albans
Henderson, R., Macorna, Ayrshire (0).											
*Ripon Lea Pansy ..	20674	19.1.32	4	3,420	4·30	147·01	270	Jr. 3 ..		.. ..	Cathcart Lloyd
Henderson, W., Grasmere, Ayrshire, Share Farm (0).											
Viola 8th of Carracoorte..	15863	8.1.32	5½	7,410	4·29	317·80	350	Mature ..		220, 284, 367, 344	Maxwell of Sparrovale
Lena 3rd of Carracoorte..	9396	6.2.32	15½	7,191	4·56	327·74	350	Mature ..		212, 178, 194, 300, 387, 338, 367	Problem of Willow Vale
Henderson, W., Grasmere, Ayrshire, Home Farm (1).											
Carracoorte Gerty 10th ..	19694	17.1.32	23½	6,155	4·84	298·18	270	Jr. 3 ..		.. ..	Blue Bell's Pride of Glencourt
Carracoorte Brownie 6th	9327	7.3.32	16½	5,967	4·80	286·62	350	Mature ..		247, 241, 265, 353, 307, 341, 267	Lord Dudley of Gowrie Park
Carracoorte Lucy 8th ..	15860	20.3.32	13	6,854	4·41	302·26	350	Mature ..		214, 342, 375	Donald of Sparrovale
Hore, L. G., Leitchville, Illawarra Shorthorn (3).											
†Melba 80th of Darbalara	16934	24.12.31	4	5,558	4·05	225·12	350	Mature ..		229 ..	Walton of Darbalara
Ruby 16th of Darbalara..	16940	5.1.32	7	5,826	4·36	254·10	350	Mature ..		243 ..	ReEcho of Darbalara
*Virginia 26th of Darbalara	16945	6.1.32	4	6,045	4·42	267·33	350	Mature ..		188 ..	Melbourne of Darbalara
Lemon Grove Pride 4th ..	1914	28.1.32	16	5,285	3·96	209·27	230	Jr. 2 ..		.. ..	Bruce of Greyleigh
Kimo Melba 3rd ..	2790	29.1.32	18	7,130	4·50	320·55	270	Jr. 3 ..		.. ..	Doncaster of Darbalara
Coquette of Aralabrad ..	13853 A.M.S.	5.2.32	7½	8,843	4·11	363·83	350	Mature ..		255 ..	Darley of Darbalara
Aralabad Minnie ..	16866	21.2.32	12	7,098	4·51	319·97	350	Mature ..		.. ..	Limelight of Darbalara
Rosemont Dot 3rd ..	3123	21.2.32	23	7,442	3·64	270·89	230	Jr. 2 ..		.. ..	Rosemont Topsy's Count
Howlett, E. H., Morwell, Jersey (1).											
Latrobe Statuette ..	25425	8.1.32	20	5,733	5·28	302·84	270	Jr. 3 ..		270 ..	Superstrain of Banyule
Hurrey, W. H., Koonwarra (0).											
Kooreena Carrie ..	25949	11.2.32	16	4,503	6·35	286·11	310	Jr. 4 ..		256, 358 ..	Pearl's Butter King of Kirkhill
Hutchinson, J. and Sons, Somerville, Jersey (6).											
Somerville Babs 5th ..	34108	2.1.32	25½	8,839	5·44	372·03	230	Jr. 2 ..		.. ..	Somerville Reputation
Wynette of Somerville ..	18759	11.2.32	39½	11,443	4·93	563·59	350	Mature ..		403, 566, 552, 519	Heroic of Somerville
Somerville Northern Princess	23226	14.2.32	45	12,308	4·98	613·55	350	Mature ..		413, 423	His Majesty of Somerville
Somerville Sunrose ..	Vol. 19	28.2.32	19½	5,882	5·77	339·19	230	Jr. 2 ..		.. ..	Somerville Reputation
Somerville Peeress Primrose	24409	7.3.32	31½	9,003	6·05	544·36	350	Mature ..		345, 379, 435	His Majesty of Somerville
Somerville Rio Rita ..	28782	15.3.32	28½	9,759	4·90	478·07	290	Sr. 3 ..		376 ..	Banyule Aeronaut
Ingram, A. B., Powelltown, Illawarra Shorthorn (0).											
*The Pines Polly 2nd ..	Vol. 1	14.2.32	N.O.C.	7,125	3·44	245·05	270	Jr. 3 ..		.. ..	Hero of Lemon Grove
Itzerott Bros., Heathcote, Jersey (3).											
Five Gums Frauline ..	Vol. 19	4.1.32	21½	6,503	5·63	365·84	230	Jr. 2 ..		.. ..	Staghorn Clementine Masterpiece 2nd
Five Gums Goldie 3rd ..	34114	5.3.32	25	8,700	5·19	451·31	270	Jr. 3 ..		.. ..	Pearl's Lad of Coolwoola
Five Gums Linaria ..	34115	9.3.32	16½	6,254	6·19	387·29	250	Sr. 2 ..		.. ..	Staghorn Clementine's Masterpiece 2nd
Jenkins, T. C., Tongala, Jersey (2).											
*Strathbow Roseleaf ..	28990	8.1.32	4	4,305	5·94	255·75	250	Sr. 2 ..		.. ..	Troed-y-Rhiew Tor-y-Dydd
Kent, G. A., Archie's Creek, Ayrshire (1).											
Woolamai Darling ..	C.R.	11.2.32	14	4,389	4·53	198·66	230	Jr. 2 ..		.. ..	Statesman of Gowrie Park
Woolamai Dream ..	C.R.	15.2.32	11	4,083	5·04	205·89	230	Jr. 2 ..		.. ..	Bonny Boy of Woolamai
Woolamai Promise ..	20905	15.2.32	15½	5,898	4·45	262·36	270	Jr. 3 ..		221 ..	Woolamai Ben
Pet of Woolamai Park ..	12358	2.3.32	31	8,537	4·58	391·40	350	Mature ..		264, 265, 334, 372, 354	Statesman of Gowrie Park
King, H. W., Warragul, Jersey (1).											
Karoola Honeybee ..	21389	1.2.32	28½	9,528	5·16	491·86	350	Mature ..		412, 426, 533, 512	Gordon of Oaklands
Knowles, T., Dandenong, Ayrshire (4).											
Dandy Lily	23608	31.12.31	30½	7,832	4·07	318·55	230	Jr. 2 ..		.. ..	Beleura Sarchedon
Dandy Olive	23613	13.1.32	28	7,673	3·85	295·12	230	Jr. 2 ..		.. ..	Beleura Sarchedon
Dandy Shamrock ..	C.R.	26.1.32	27	6,885	4·75	326·93	230	Jr. 2 ..		.. ..	Beleura Sarchedon
Beleura Solo 2nd ..	19513	4.3.32	21½	9,543	4·24	404·46	330	Sr. 4 ..		354, 280	Sunshine of Olivedale

* 240 days in Test. † 210 days in Test.

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Koenig Bros., Mooroopna North, Ayrshire (2).											
Wattle Park Eileen ..	C.R.	8.2.32	17	6,291	3·85	242·30	230	Jr. 2	..	.. ..	Sunlight of Lady Bank
Oakbank Quince ..	15284	26.3.32	18½	10,014	4·17	417·79	350	Mature	..	388, 402, 401	Linquist of Oakbank
Lade, A., Alexandra, Jersey (2).											
Jess's Fancy of Glen Vale	21422	15.1.32	N.O.C.	7,359	5·35	393·49	350	Mature		309, 386 ..	King of St. Albans
Glen Vale Holly ..	24448	21.1.32	21	6,459	6·97	450·15	350	Mature	..	288,403 ..	King of St. Albans
Lennie, Mrs. E. M., Tongala, Jersey (2).											
The Valley Princess ..	Vol. 19	19.1.32	18	6,404	4·96	317·63	230	Jr. 2	..	.. ..	Blackthorn of Fairview
The Valley Merella 2nd ..	23259	21.1.32	16	5,237	6·05	316·93	350	Mature	..	267, 372, 415, 405	Stargazer of the Valley
Lockett, C. and R., Ballarat, Jersey (0).											
Aveley Comedienne ..	25910	2.2.32	N.O.C.	4,257	5·81	247·25	350	Mature	..	.. ..	Paynter of Aveley
Glenalvie Mayflower ..	25453	9.3.32	10½	4,547	5·39	245·15	270	Jr. 3	..	.. ..	Ptrope of Comely Banks
Longerenong Agricultural College, Dooen, Ayrshire (3).											
Longerenong Laureate ..	C.R.	9.3.32	15½	7,475	4·64	346·93	230	Jr. 2	..	.. ..	Lily's Lad of Holly Green
Longerenong Bougainvillea	21907	21.3.32	19	7,416	4·66	345·25	270	Jr. 3	..	273 ..	Lily's Lad of Holly Green
Longerenong Palm 2nd ..	20490	21.3.32	N.O.C.	7,389	4·39	324·70	310	Jr. 4	..	214, 282 ..	Lily's Lad of Holly Green
*Longerenong Blackbird	21906	25.3.32	4	4,695	4·49	210·99	270	Jr. 3	..	148 ..	Lilt's Lad of Holly Green
Lowing, Mrs. L., Tongala, Jersey (2).											
Troed-y-Rhiew Elusen ..	26043	4.1.32	24	8,619	4·25	366·38	310	Jr. 4	..	276 ..	Cymro of Belgonia
Troed-y-Rhiew Ia ..	Vol. 19	5.1.32	8	6,288	4·32	271·37	290	Sr. 3	..	.. ..	Cymro of Belgonia
Troed-y-Rhiew Mifanwy 2nd	Vol. 19	10.1.32	21	5,747	5·90	339·25	230	Jr. 2	..	.. ..	Montrose Duke of Glen Iris
Lyon, C. G., Heidelberg, Jersey (7).											
Banyule Molly 25th ..	24458	15.1.32	24	7,164	5·66	405·62	330	Sr. 4	..	375, 443 ..	Wotton Airman
Banyule Silvermine 49th	24469	17.2.32	24	8,589	5·33	457·42	310	Jr. 4	..	282, 418 ..	Concentration of Banyule
Banyule Silver Mist ..	25468	22.3.32	16	6,911	5·30	366·07	270	Jr. 3	..	336 ..	Air Lord of Banyule
Silvermine 42nd of Banyule	21435	24.3.32	21½	8,558	5·72	489·59	350	Mature	..	344, 406, 510	Wotton Airman
Banyule Tiddlewinks 7th	29038	28.3.32	20	6,312	6·21	391·96	230	Jr. 2	..	.. ..	Superstrain of Banyule
Banyule Silvermine 48th	24468	28.3.32	22	8,226	5·43	446·33	330	Sr. 4	..	285, 389 ..	Air Lord of Banyule
Banvule Silvermine 64th	28845	29.3.32	23	7,503	6·35	476·40	250	Sr. 2	..	.. ..	Air Lord of Banyule
McClelland, Miss C. E., "The Elms," Tunstall, Jersey (1).											
Peggy of the Elms ..	21446	25.3.32	25	8,432	4·96	418·29	350	Mature	..	237, 313, 357, 278	Relbias Nap of Austral Park
McDougall, J., Byaduk, Jersey (1).											
Parkview Colleen ..	24477	12.3.32	19	9,432	4·94	466·26	350	Mature	..	295, 325, 337	Cream Lad of Fairview
McGarvie, K., Pomborneit, Jersey (3).											
Greenwood Blossom ..	33478	11.3.32	29	8,859	5·85	518·48	290	Sr. 3	..	342 ..	Retford Peer
Greenwood Begum ..	33469	12.3.32	29½	9,519	5·04	479·97	290	Sr. 3	..	253 ..	Retford Peer
Greenwood Constance ..	Vol. 19	25.3.32	15	5,331	5·24	279·42	250	Sr. 2	..	.. ..	Emperor of Greenwood
McInnes, A. A., Gunbower, Dairy Shorthorn (0).											
*Loch Ness Pearl Beauty	Vol. 1	17.2.32	4	3,240	4·17	135·11	270	Jr. 3	..	151 ..	126th Earl of Pentland
Loch Ness Pearl Beauty 2nd	Vol. 1	20.2.32	17	5,585	4·35	242·99	250	Sr. 2	..	.. ..	Braylands Matilda's Duke
McNabb and Son, Irrewillipe, Jersey (6).											
Maxon Lodestone ..	29076	5.3.32	21½	6,708	6·16	413·46	290	Sr. 3	..	255, 255 ..	Starbright's Prince of Glen Iris
Easter Daisy of Springhurst	21607	7.3.32	22½	8,735	4·93	430·75	350	Mature	..	293, 360, 413, 388	Alloy of Banyule
Boorene Silvermine's Clara	25250	21.3.32	10½	7,571	5·24	396·64	350	Mature	..	364, 354, 429	Lady Grey's Silvermine 2nd of Somerset
Moxon Lady Linnacre 2nd	Vol. 19	22.3.32	10	4,821	5·88	283·37	230	Jr. 2	..	.. ..	Avalon Noble 8th
Gleneira Ivory (Ayrshire)	20134	24.3.32	10	8,303	4·67	387·58	310	Jr. 4	..	289 ..	Aristocrat of Gleneira
Boorene Lux	24244	27.3.32	20	7,412	5·47	405·87	350	Mature	..	295, 345 ..	Agustus of Roelands
McWhae and Silvester, Merino, Guernsey (0).											
Talisker Dewy Morn ..	2646	13.1.32	16	5,133	4·85	248·94	250	Sr. 2	..	179 ..	Yarraview Goldmine
Talisker Clara	2645	22.1.32	10	4,032	5·04	203·36	250	Sr. 2	..	181 ..	Minnamurra Gale
Talisker Sweet Vermal ..	2651	20.3.32	22½	3,756	5·64	211·82	250	Sr. 2	..	172 ..	Yarraview Goldmine
Maher Bros., Seymour, Ayrshire (1).											
Evelyn Song	21397	26.3.32	13½	6,122	4·30	263·29	230	Jr. 2	..	.. ..	Gowrie Park Scottish Expert
Maher, R. H., Tongala, Jersey (0).											
Rosemont Lassie Fowler 4th	Vol. 19	9.2.32	11½	4,778	5·87	280·36	330	Sr. 4	..	.. ..	Rosella's 2nd Noble of Rosemont
Mailer, R. (Dr.), Tallygaroopna, Jersey (2).											
Maneroo Dewdrop 2nd ..	Vol. 19	11.2.32	17½	5,361	5·72	306·53	230	Jr. 2	..	.. ..	Wompini Royal Duke
Maneroo Daisy 4th Buttercup	33494	29.2.32	N.O.C.	8,530	5·16	440·16	270	Jr. 3	..	302 ..	Uranus of Aveley
Marshman, A. R., Archie's Creek, Jersey (0).											
Forgan Bloom ..	33509	19.3.32	13½	4,373	5·62	245·67	270	Jr. 3	..	172, 239 ..	Fisher of Melrose

* 240 days in Test.

Name of Cow.	Herd Book No.	Date of Calving	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Middleton, E. M., Hamilton, Jersey (3).											
Wompini Mistress Chloe	33525	9.2.32	27½	9,056	5·81	526·41	290	Sr. 3	..	324 ..	Werribee Masterman
Ear Park Sweet Nell ..	33523	3.3.32	26	9,020	5·59	504·65	290	Sr. 3	..	291 ..	Alert of Farrington
*Strathkellar Cornflower..	C.R.	16.3.32	23	5,700	5·93	337·82	230	Jr. 2	..	.. ..	King's Bounty of Somerville
Milne, R. K., Camperdown, Jersey (3).											
Stonehaven Winsome ..	Vol. 19	27.1.32	14	4,920	5·31	261·41	230	Jr. 2	..	.. ..	Vanilla of Allambee
Morvah Beauty ..	33380	28.2.32	13	6,067	5·68	344·71	250	Sr. 2	..	.. ..	Morvah Pride
Stonehaven Lady Lyons..	Vol. 19	20.3.32	16½	6,065	5·49	332·75	230	Jr. 2	..	.. ..	Mt. Violet Maitland
Moore and Co., J., Yarram, Jersey (1).											
Tooloonook Boltonia 2nd	33541	6.3.32	17	5,435	6·18	335·78	270	Jr. 3	..	259 ..	Heroic of Somerville
Muhlebach, W. X., Batesford, Jersey (1).											
Strathey Golden Queen ..	33556	2.1.32	20½	6,127	5·02	307·29	230	Jr. 2	..	.. ..	Strathey Golden Boy
Murray, H. C., Murrabit, Jersey (1).											
Pretty Lass of Blackwood Valley	17833	19.1.32	23½	7,916	5·08	401·95	350	Mature	..	.. ..	Retford Mourier Lad
Noble, T. M. and Son, Maffra, Jersey (1).											
Finchley Handsome Lady	Vol. 19	9.3.32	17	5,789	7·25	419·61	230	Jr. 2	..	.. ..	Werribee Lord Burnham
Onley, W. H., Caldermeade, Ayrshire (2).											
Holm Boronia	20346	25.1.32	7	5,177	5·15	266·68	290	Sr. 3	..	218 ..	Pride of Thirlmere
Holm Laurel	21782	30.1.32	22	7,225	4·43	320·18	230	Jr. 2	..	.. ..	Pride of Thirlmere
Holm Laurette ..	20349	7.2.32	19½	7,817	3·62	282·93	270	Jr. 3	..	216 ..	Pride of Thirlmere
Holm Bunty	18281	20.3.32	4	5,574	4·72	263·36	330	Sr. 4	..	239, 236 ..	Pride of Thirlmere
Orchard, Mrs. L., Grahamvale, Jersey (0).											
Jersey Vale Gaiety ..	24536	12.2.32	17	5,399	4·92	265·90	350	Mature	..	214, 279 ..	Princess 2nd Twylish of Grangelea
Pearl of Jersey Vale ..	15581	13.2.32	14	4,965	4·80	238·51	350	Mature	..	202, 220, 285, 311; 277, 220	Choice 2nd of Tarnpirr
Rose of Jersey Vale ..	9590	1.3.32	10	4,433	4·94	219·19	350	Mature	..	198, 236, 225, 321, 251, 220, 318, 285, 274	Golden Twylish
Overend, Mrs. A. E., Sale, Jersey (4).											
Bon Accord Maggie ..	Vol. 19	19.1.32	18	5,074	5·79	293·67	230	Jr. 2	..	.. ..	Bon Accord John
Waratta Elvie Bell ..	23504	9.2.32	15½	5,584	5·83	325·51	350	Mature	..	264, 265, 302	Jubilee Lifelight
Waratta Emma Bell ..	23505	17.2.32	19	6,431	5·90	379·63	350	Mature	..	314, 324, 348	Jubilee Lifelight
Bon Accord Belle ..	33576	7.3.32	17½	5,217	6·42	335·00	250	Sr. 2	..	293 ..	Bon Accord David
Bon Accord Madam Pompadour	29284	23.3.32	15	6,071	6·14	372·72	330	Sr. 4	..	227, 330 ..	Bon Accord Torus
Padgett, I., Werribee, Friesian (1).											
St. Albans May ..	2596	13.3.32	43	13,814	3·60	497·31	350	Mature	..	382, 397, 435	Eco Sylv King Pontiac
Parbury, W., Wesburn, Jersey (0).											
Golden Leaf 10th of Brookfield	21555	22.1.32	17	6,261	5·21	326·24	350	Mature	..	262, 359, 183	Wyndottes Star of Werribee
Jessamine 4th of Brookfield	21559	14.2.32	19½	5,228	4·98	260·24	350	Mature	..	320 ..	Werribee Wyndotte's Star
Daisy 3rd of Brookfield ..	15585	17.3.32	16	4,635	5·79	268·34	350	Mature	..	360, 312, 349, 284	Daisy's Morroco's Fox of Werribee
Parker Bros., Seymour, Ayrshire (1).											
Cathcart Linette ..	19718	25.3.32	20	9,228	4·41	407·16	310	Jr. 4	..	259 ..	Poppy's Advance of Ben Kell
Pattison, F., Tongala, Ayrshire (1).											
Willow Park Fairy ..	22241	4·1.32	10	6,260	4·26	266·43	270	Jr. 3	..	260 ..	Clansman of Glenholme
Willow Park Pearl ..	22243	14.1.32	16½	6,954	4·57	317·63	270	Jr. 3	..	260 ..	Clansman of Glenholme
Pettitt Bros., Geelong, Ayrshire (2).											
Blinkbrae Mavis ..	19562	13.2.32	12	5,663	4·06	229·65	270	Jr. 3	..	253 ..	Happy Jack of Gleneira
Blinkbrae Beautiful 2nd..	15762	17.3.32	6	8,954	4·56	408·31	350	Mature	..	260, 285, 394	Blair of Blinkbrae
Phillips, J., Murraydale, Jersey (0).											
*Peri Vanilla 2nd ..	23367	25.1.32	4	4,335	6·14	266·27	350	Mature	..	220, 313, 299, 339	Peerless Eclipse of Meadowvale
Plattfuss, J., Tongala, Friesian (3).											
Greenvale Duchess Paxton	2768	5.1.32	35	11,760	3·35	393·78	350	Mature	..	325, 466, 440, 450	Lydholme Segis Paxton
Greenvale Springfield De Kol	Vol. 12	18.2.32	16	7,497	3·71	278·02	250	Sr. 2	..	.. ..	Victoria Double Oak De Kol
Greenvale Galatea De Kol 2nd	Vol. 12	11.3.32	28½	7,206	3·44	247·83	230	Jr. 2	..	.. ..	Victoria Double Oak De Kol

* 240 days in Test.

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Pollard, C., Wodonga, Jersey (1).											
Springhurst Tazerim ..	26173	25.3.32	11	7,121	5·31	378·48	290	Sr. 3	..	307, 333 ..	Valiant Prince of Glen Iris
Polmear, M. H., Tallangatta Valley, Friesian (1).											
Fairview Catriona Segis ..	Vol. 12	8.2.32	41½	10,128	4·00	405·48	250	Sr. 2	..	.. ..	Burnbank Gay Triumph
Powell, R., Mrs., Camperdown, Jersey (1).											
Mt. Violet Starlight ..	33628	20.3.32	18½	6,308	6·02	379·85	290	Sr. 3	..	240 ..	Chief of Allambie
Poyner, R., Lilydale, Jersey (1).											
Lilydale Promise ..	34287	13.3.32	16½	5,444	5·77	314·14	230	Jr. 2	..	.. ..	Staghorn Promise's Masterpiece
Prout, A., Leongatha, Jersey (1).											
Wattle Vale Wild Flower	23380	19.3.32	26½	8,727	5·25	457 81	350	Mature	..	409, 402, 464	Duke of Melrose
Raleigh, Miss H. E., Pakenham Upper, Jersey (0).											
Trumpet Daffodil of Goronga Farm	21597	13.3.32	4	3,672	6·06	222·61	350	Mature	..	269, 345, 306	Trumps of Banyule
Ralph Bros., Moorabbin, Illawarra Shorthorn (4).											
Lucky 5th of Lemon Grove	11865	14.1.32	24	9,395	4·02	377·46	310	Jr. 4	..	.. ..	Butterson of Lemon Grove
Parkview Eva 14th ..	5083	19.1.32	22	6,593	3·89	256·68	230	Jr. 2	..	.. ..	Jean's Monarch of Blacklands
Floss of Alne Bank ..	14938	3.2.32	12	5,090	3·88	197·71	270	Jr. 3	..	.. ..	Royal Light of Alne Bank
Diana of Swanlea ..	12221 I.M.S.	11.2.32	25	10,294	3·63	373·19	290	Sr. 3	..	.. ..	Mimer of Greyleigh
Parkview Treasure 5th ..	5085	1.3.32	18	6,912	3·78	261·48	230	Jr. 2	..	.. ..	Jean's Monarch of Blacklands
Favourite 4th of Lemon Grove	14330	7.3.32	14	7,443	3·86	286·96	290	Sr. 3	..	.. ..	Monitor of Tabbagong
Rankin, W. J., Trafalgar, Jersey (2).											
Brookfield Sunshine 13th	Vol. 19	6.3.32	24½	7,094	4·79	339·89	290	Sr. 3	..	227 ..	Werribee Wyandotte Star
Marimba Sweet Pearl ..	Vol. 19	15.3.32	15	5,076	5·43	275·38	230	Jr. 2	..	.. ..	Marimba Rosalind Ideal Duke
Read, J. D., Springhurst, Jersey (4).											
Springhurst Alsyke 4th ..	29329	13.3.32	17	6,605	6·91	456·47	290	Sr. 3	..	303, 406 ..	Starbright's Prince of Glen Iris
Springhurst Nightshade 3rd	26170	17.3.32	15½	6,606	6·68	441·53	290	Sr. 3	..	361, 372 ..	Starbright's Prince of Glen Iris
Springhurst Nerine 2nd ..	26169	21.3.32	11	6,320	5·96	376·47	290	Sr. 3	..	271, 349 ..	Starbright's Prince of Glen Iris
Tecoma of Springhurst ..	12225	27.3.32	30	11,996	5·17	620·44	350	Mature	..	288, 428, 430, 484, 565, 605, 500, 561	Cossock of Springhurst
Richardson, W. S., Bacchus Marsh, Jersey (1).											
*Mike's Vanity of Willis Vale	16325	31.12.31	4	3,990	5·59	223·17	350	Mature	..	193, 228 ..	Kyora's Lotina's Merry Mike
Silvermine 34th of Banyule	18813	1.1.32	18	6,327	5·20	328·70	350	Mature	..	281, 349, 231, 307	Matador of Banyule
Sutton Lea Latricia ..	23395	7.3.32	11½	4,349	5·38	234·19	350	Mature	..	235, 195, 294, 277	The Pearl of Upperlong
Sutton Lea Airflier ..	Vol. 19	29.3.32	16	4,914	6·96	342·11	230	Jr. 2	..	.. ..	Banyule Petalon 2nd
Robinson, Miss L., East Kew, Jersey (0).											
Kyora Twinkle 2nd ..	15044	19.3.32	10½	4,128	5·87	242·17	350	Mature	..	326, 289, 275	Werribee Wyandotte's Fancy
Rodda, W. G., Warracknabeal, Jersey (3).											
Starfinch 3rd of Clover Flat	23475	14.1.32	17	5,249	5·50	288·68	350	Mature	..	.. ..	Beau Brummel of Banyule
Banyule Princess III. ..	24463	2.2.32	24½	9,032	5·60	505·45	310	Jr. 4	..	278 ..	Air Lord of Banyule
Lady Rover of Danton ..	16289	3.3.32	16	7,606	6·00	456·14	350	Mature	..	.. ..	Jellicoe of Melrose
Sweet Lass 2nd of Clover Flat	21411	4.3.32	20½	8,355	5·25	438·75	350	Mature	..	.. ..	Beauty's Lad
Ryan, D. M., and Sons, Colac, Illawarra Shorthorn (1).											
Numbawarra Maisie ..	5092	27.2.32	20½	8,889	4·22	375·48	310	Jr. 4	..	330 ..	Alma's Jellicoe of Hillcrest
Salesian College, Sunbury, Ayrshire (1).											
Rupertswood Rosella ..	22060	17.2.32	15	7,431	4·31	320·24	270	Jr. 3	..	.. ..	Lancer of Rupertswood
Schier, H. A., Bamawm, Jersey (1).											
Preston Trinket ..	25597	1.1.32	16	5,143	6·18	318·08	310	Jr. 4	..	373, 385 ..	Preston Merry Lad
Schlipalius, A. J., Kilmany South, Jersey (1).											
Fairbank Duchess ..	24596	4.3.32	16½	6,074	6·05	367·57	350	Mature	..	271, 281 ..	Gaylad of Fairbank

* 210 days in Test.

Name of Cow	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Shallard, F. A., Undera, Jersey (1).											
Jubilee Waratah ..	26188	22.1.32	27	9,357	4·97	465·31	330	Sr. 4	..	..	Jubilee Fanlight
Simpson and Son, Lower Fern Tree Gully, Jersey (4).											
Norma of Terara ..	11505	6.1.32	25	9,016	5·60	505·28	350	Mature	..	415, 441, 454, 593, 489, 533	Carnegie of Terara
Matilda of Dalebank ..	15063	8.2.32	22	6,882	6·20	426·97	350	Mature	..	398, 422, 417	Twylish of Dalebank
Dunalister's Fascination	19940	19.2.32	20	6,259	6·08	380·63	350	Mature	..	..	Starbright's Duke of Glen Iris
Hazeldale Bracelet ..	25551	28.2.32	20	6,420	5·53	355·27	350	Mature	..	332, 404, 447	Lord Mannikin of Hazeldale
Smith, G. and W., Fish Creek, Jersey (1).											
Rydon Rosalind ..	29491	30.12.31	12	5,075	6·41	325·43	270	Jr. 3	..	335	Burnside Monitor
Steele, C., Shoreham, Jersey (2).											
Jubilee Crocus	23389	1.3.32	26	7,860	5·87	461·17	350	Mature	..	..	Goddingron Winks 6th, imp.
Retford Magenta ..	11467	9.3.32	27½	8,113	6·30	511·09	350	Mature	..	..	Promitheus 1738, imp.
Stoll, Mrs. L. T., Rokeby, Jersey (0).											
Clarendon Eyre Pretty Peggy	29627	6.2.32	18½	5,749	5·51	316·88	330	Sr. 4	..	250	Rose's Eminent of Clarendon Eyre
Stoney, W. B., Drouin West, Jersey (1).											
Wompini Wild Flower ..	33804	7.3.32	11	5,533	5·95	328·96	270	Jr. 3	..	229	Wompini Noble
Taylor, Geo., Caldermeade, Ayrshire (1).											
Gowrie Park Sherlie ..	18160	31.1.32	27½	8,227	3·59	294·96	350	Mature	..	247, 338, 244, 302	Scottish Hero of Gowrie Park
Eldorado Violet ..	21359	3.2.32	22	5,628	4·31	242·43	230	Jr. 2	..	..	Perfection of The Valley
Bright of Glen Alvie ..	11160	25.3.32	15	7,951	4·40	349·87	350	Mature	..	367, 445, 430, 335	Patron of Wethersdane
Telford Bros., Kyabram, Ayrshire (1).											
Hyde Park Crystal ..	20362	18.3.32	24	8,477	4·10	347·87	270	Jr. 3	..	225	Oakbank Rheostat
Tomasetti, B. G., Drouin, Ayrshire (5).											
Glencorren Modena ..	21506	10.2.32	24	8,324	4·67	388·82	250	Sr. 2	..	320	Scotswood Michael 2nd
Leithvale Ella	20465	10.2.32	18½	7,346	4·71	345·77	290	Sr. 3	..	292	Gleneira Grantham
Glencorren Nellie Ray ..	21507	17.2.32	19	6,897	4·34	299·51	270	Jr. 3	..	266	Federal of Warrook
Glencorren Lilac ..	22832	23.2.32	28	7,961	4·94	393·16	230	Jr. 2	..	..	Scotswood Michael 2nd
Glencorren Madge ..	20119	3.3.32	18½	7,017	4·35	305·17	270	Jr. 3	..	230	Gleneira Grantham
Unthank, J., Somerville, Jersey (3).											
Mooroodue Maisie ..	29561	10.1.32	13½	4,799	7·06	338·62	270	Jr. 3	..	200, 255	Mooroodue Repulse
Jubilee Hawthorn ..	21615	26.2.32	N.o.c.	4,532	6·90	312·78	350	Mature	..	..	Goddington Winks 6th, imp.
Mooroodue Coral ..	Vol. 19	6.3.22	18	4,323	7·08	306·00	230	Jr. 2	..	..	Mooroodue Silver King
Mooroodue Nell ..	33858	10.3.32	17	5,529	6·36	351·77	250	Sr. 2	..	251	Banyule Aeronaut
Vagg, E. J., Leongatha, Jersey (1).											
Lady of Queen's Vale ..	19963	7.1.32	27½	7,878	5·87	462·16	350	Mature	..	431, 451, 452, 488	Daphne's Peer of Queen's Vale
Van Brummellen, J. K., Ferntree Gully, Friesian (1).											
Bolero Inka Blanchje ..	3352	30.1.32	31	9,368	3·66	342·66	270	Jr. 3	..	312	Burnbank Inka Sylvia's Lad
Vaughan Bros., Girgarre, Jersey (2).											
Dolly 2nd of Lynroy ..	17852	25.1.32	19½	6,779	5·98	405·43	350	Mature	..	420	Lily's Pride of Holmwood
Lynroy Olive 5th ..	29570	24.2.32	24	8,496	5·98	508·34	290	Sr. 3	..	319, 294	Sherbourne Wyandotte's King
Venn, V. A., Montgomery P.O., Sale, Jersey (1).											
Myrtleview Maid ..	Vol. 19	23.3.32	22½	6,146	5·64	346·86	230	Jr. 2	..	..	Fairbanks Gay Boy
Walker, C. S., Swan Hill, Jersey (0).											
Warwick Princess Ivy ..	26271	1.1.32	17½	7,913	43·6	345·14	350	Mature	..	320, 344, 399	Chevrolet of Banyule
Wallace, A., Bendigo, Ayrshire (0).											
Glen Cooee Wildflower ..	16128	10.2.32	6½	5,875	4·36	256·37	350	Mature	..	276, 224	Fairy Prince of Glen Cooee
Glen Cooee Daffodil ..	16119	11.2.32	7½	4,002	4·71	188·30	350	Mature	..	292, 242	Fairy Prince of Glen Cooee
Warragul High School, Red Poll (0).											
Gipps Rosa	2382A	28.1.32	6	3,588	4·01	143·86	230	Jr. 2	..	262	Gipps Byron
Gipps Thera	2188A	5.2.32	15	4,626	4·56	211·00	290	Sr. 3	..	..	Woodburn Laureate
Gipps Lora	2877A	19.2.32	17	4,934	4·44	219·01	230	Jr. 2	..	..	Gipps Byron

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Watts, J., Stanhope, Jersey (1).											
Kantara Jessica	24580	16.1.32	18	7,014	4·66	327·14	330	Sr. 4	..	325, 416	Ku Ku Fashion Plate
Kantara Violette	26205	19.2.32	28½	8,441	5·90	498·26	310	Jr. 4	..	305, 403	Ku Ku Fashion Plate
Webb, H. L., Sunbury, Ayrshire (1).											
Holly Green Scottish Queen	21776	11.1.32	21	6,362	4·02	255·51	230	Jr. 2	..	..	Holly Green Gold Coin
Holly Green Mermaid	20337	14.1.32	7	5,216	4·67	243·77	290	Sr. 3	..	244	Lily's Goldmine of Holly Green
*Holly Green Princess	20338	16.1.32	4	2,085	3·99	83·18	270	Jr. 3	..	218	Lily's Goldmine of Holly Green
Holly Green Quiver	18276	6.2.32	N.o.c.	4,835	4·54	219·39	350	Mature	..	166, 205, 216	Headlight of Holly Green
Holly Green Aggie	18266	12.3.32	10½	7,088	3·91	276·85	310	Jr. 4	..	209, 250	Holly Green Lily's Goldmine
Holly Green Quiver's Queen	20341	29.3.32	4	3,726	4·73	176·40	290	Sr. 3	..	199	Holly Green Gold Coin
West, J. C., Notting Hill, Illawarra Shorthorn (8).											
Parkview Tot	Vol. 3	4.1.32	37	10,854	3·81	414·05	230	Jr. 2	..	..	Jean's Monarch of Blacklands
Birdie 2nd of The Pines	18146	21.1.32	20	9,199	4·21	387·36	310	Jr. 4	..	282	Hero of Lemon Grove
Mabel 4th of Monana	14309	28.1.32	16	8,579	3·92	336·53	350	Mature	..	277	Admiral of Oakleigh
Dove 2nd of Rockleigh	14767	30.1.32	25½	9,117	4·18	381·04	350	Mature	..	..	Marion's Hero of Hillview
Parkview Alice 8th	5097	4.2.32	28½	8,591	3·89	334·38	230	Jr. 2	..	..	Jean's Monarch of Blacklands
†Rosemont Comet 6th	2865	5.2.32	4	4,620	3·88	179·17	270	Jr. 3	..	197	Flora's Boy of Rosebank
Daisy 5th of Allawalla	8158	13.2.32	18	7,346	4·82	354·35	290	Sr. 3	..	248	Premier of Fairfield
Crummy 6th of St. Elmo	14317	20.2.32	28½	10,247	3·93	402·84	330	Sr. 4	..	289	Duke of St. Elmo
Middlemount Reddie 2nd	15161	7.3.32	27	9,833	4·10	403·50	270	Jr. 3	..	247	Earl of Glenburn
Rainbow 4th of Aine Bank	14321	16.3.32	26½	9,824	3·91	384·00	310	Jr. 4	..	248	Hero of Lemon Grove
Wilmot Joseph, Bullarook, Jersey (1).											
Banyule Silvermine 58th	29032	21.3.32	23½	7,410	5·87	435·05	270	Jr. 3	..	308	Syperstrain of Banyule
Wilson, D. C., Derrinallum, Jersey (0).											
Ayton Law Silvie's Girl 2nd	33923	25.1.32	14	4,214	5·91	248·97	250	Sr. 2	..	..	Wagga Yambil's Goddington Noble
Wood, J. V. M., Heidelberg, Jersey (5).											
Clarendon Eyre Rose Marie 2nd	Vol. 19	23.1.32	20	6,450	5·71	368·10	270	Jr. 3	..	340	Sir Northwood
Clarendon Eyre Utopia	29628	26.1.32	18	6,934	6·24	432·49	270	Jr. 3	..	444	Eminent's Achievement of Clarendon Eyre
Tressie of Sunnyford	16766	4.2.32	18	7,928	6·65	527·48	350	Mature	..	402, 461, 527	Sparkles Chief 961
Clarendon Eyre Little Buttercup 2nd	29624	17.2.32	26	7,683	6·46	496·61	310	Jr. 4	..	370, 435	Clarendon Eyre Rosie's Eminent
Glenesk Lilac Domino	Vol. 19	6.3.32	16½	5,511	6·06	334·07	270	Jr. 3	..	306	Clarendon Eyre Rosie's Eminent
Woodmason, W., Oakleigh, Jersey (2).											
Melrose Handsome Girl 15th	33962	26.1.32	17½	5,858	6·11	357·95	290	Sr. 3	..	366	Masterpiece
Melrose Jenny Lind 23rd	29650	16.2.32	26	9,902	5·29	523·78	310	Jr. 4	..	350, 462	Masterpiece
Xavier College, Kew, Jersey (5).											
Aveley Silvermine 2nd	29356	2.1.32	17	5,339	4·87	260·12	350	Mature	..	..	Economist of Aveley
Barrowby Beauty	Vol. 19	7.1.32	19	6,090	4·67	284·41	250	Sr. 2	..	..	Aveley Spendthrift
Laane Flash	19910	29.1.32	13	7,688	4·97	382·17	350	Mature	..	312, 362	Laane Lord Chief
Allambie Heroine 4th	29501	9.2.32	19	6,612	4·49	296·96	270	Jr. 3	..	..	Prince of Kirkhill
Melview Queen 5th	Vol. 19	29.3.32	14	4,760	5·97	284·00	230	Jr. 2	..	..	Handsome Boy 12th of Jerseyholme
Hartlands Echo	33452	29.3.32	25	9,167	4·28	392·62	270	Jr. 3	..	..	Karalee Duke
Young Bros., Sedgwick, Jersey (3).											
Preston Daffodil	29664	27.1.32	27½	7,836	4·77	374·02	310	Jr. 4	..	358, 409	Preston Merry Lad
Preston Bright Jewel	33970	7.2.32	21½	7,200	6·25	450·11	270	Jr. 3	..	399	Preston Merry Lad
Preston Boronia	26470	10.2.32	27½	7,899	5·20	411·02	350	Mature	..	383, 392	Acacia King

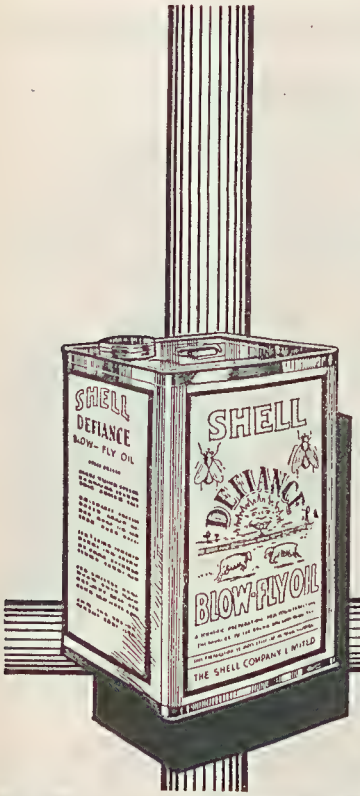
* 180 days in Test. † 210 days in Test.

Errata.

In the report for the quarter ended 30th September, printed in this *Journal* for December, Mr. P. N. Lawrence's cow Rainga Noble Leda (24441) was recorded as a mature cow; she should have been recorded as a junior four-year-old.

The weight of milk on the last day of Mr. T. F. Butcher's Maryville Eve (2503c), was stated as 11½ lb.; it should have been given as 21½ lb.

In the last Yearly Report the sire of Vanity's Pride of Woorayl (Owners Cantwell Bros., Nerrena East), was given as Twylish Winks of Rathlyn; it should have been stated as Cream Duke of Glen Iris. This cow completed only 180 days in Test.



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BULL CALVES

All are progeny of tuberculin-tested stock and of cows tested in the Standard Herd Test. All are eligible for Registration in the Friesian Herd Book of Australia

AVERAGE PRODUCTION OF FRIESIAN HERD SINCE 1927-28

Year.	Number of Cows in Test.	Milk.	Test.	Butter Fat.	Butter Fat lb. with allowances for Heifers.
		lb.	%	lb.	
1927-28	14	9,177	3·67	336·85	399·21
1928-29	10	13,644	3·41	465·24	512·74
1929-30	10	11,831	3·40	399·45	456·95
1930-31	13	12,763	3·43	431·92	500·01
1931-32	10	10,116	3·69	369·00	417·00*
Average for five years 57 *cows*		11,409	3·50	397·45	460·98

* In 1931-32 the allowances for heifers were reduced. Under the old scale this average would have been 429·00 lb.

THE HIGHEST FRIESIAN HERD UNDER TEST

The prices quoted are based on the butter-fat production of the dam at the rate of 1/- per lb., except in the case of progeny of heifers without completed test, the price then being 10 guineas

Inspection cordially invited. For further particulars apply to—

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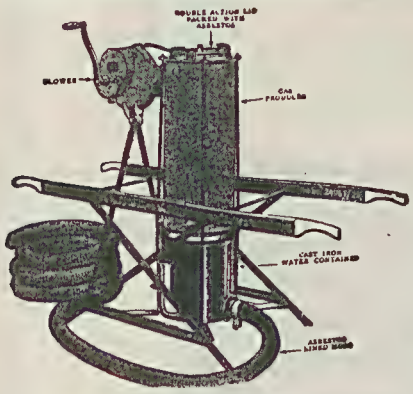

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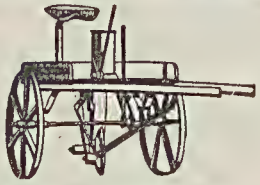

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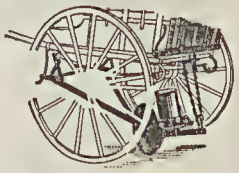

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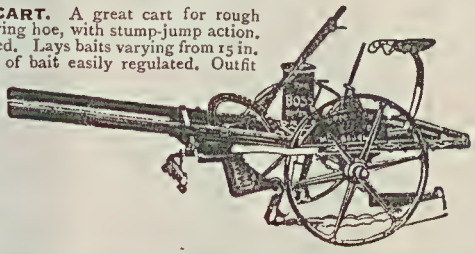

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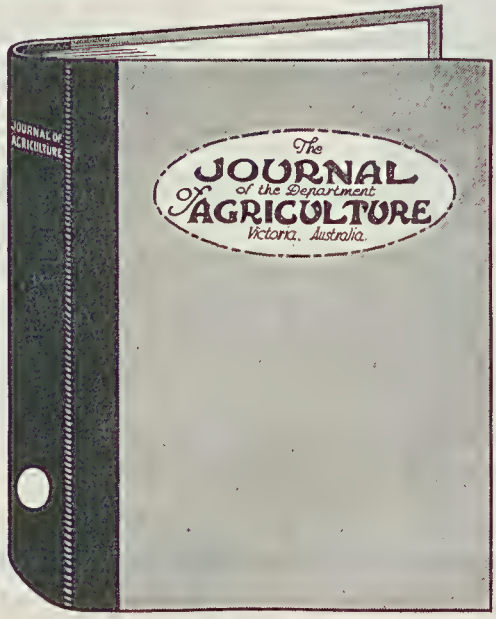

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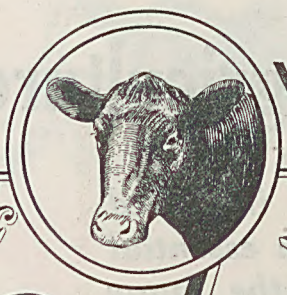

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		lb.	%	lb.	
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1928-29	41	8,547	4·23	361·85	418·33
1929-30	34	8,782	4·40	381·99	443·11
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